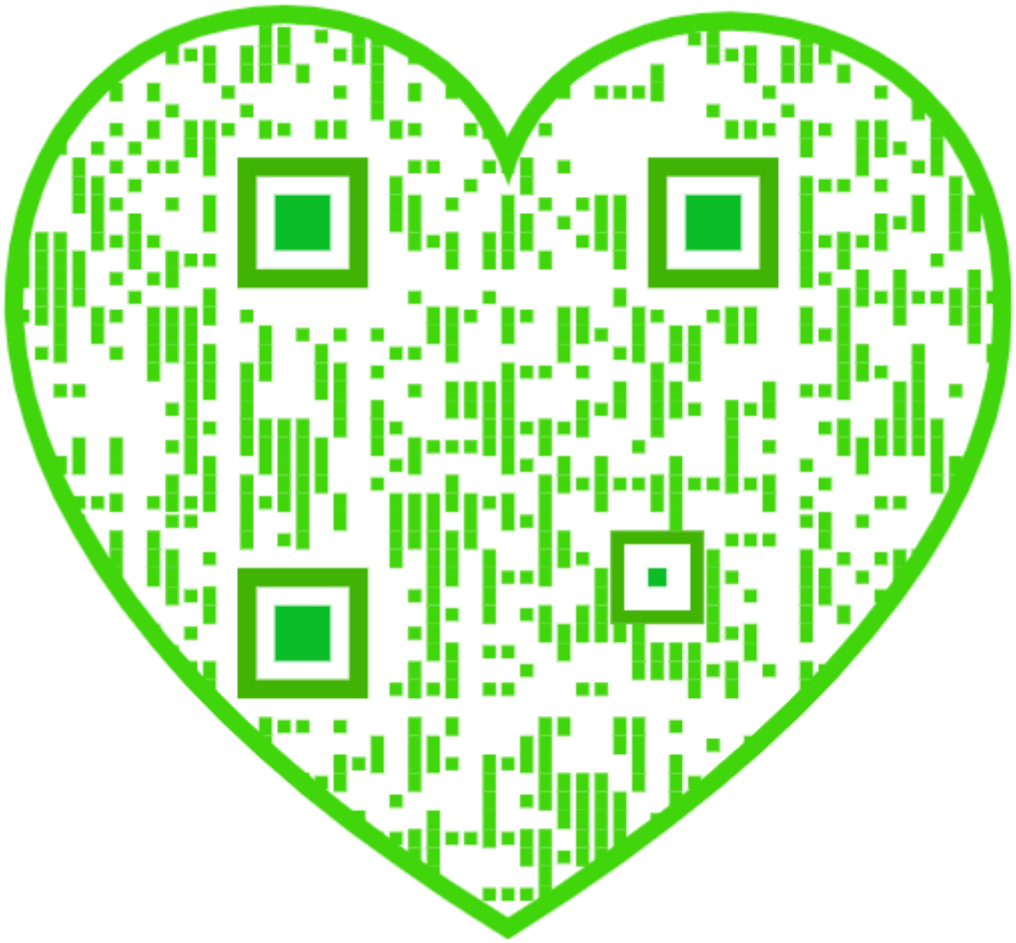

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FLORA MEDICA;

A BOTANICAL ACCOUNT

OF ALL THE MORE

IMPORTANT PLANTS USED IN MEDICINE,

IN DIFFERENT PARTS OF THE WORLD.

BY

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ETC. ETC. ETC.

Certa feram certis autorjbus; haud ego vates ——.

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PREFACE.

THERE are probably few persons engaged in teaching Botany to medical students in this country, who have not experienced great inconvenience from the want of some work in which correct systematical descriptions of medicinal plants are to be found, and which is cheap enough to be used as a class book. By the author, at least, this has been so strongly felt, that he would long since have made the present attempt at supplying the deficiency had he been a medical man, or had he not hoped in each succeeding year that such a work would have appeared from the pen of some writer of reputation, both as a botanist and pharmacologist. This expectation has not been realised; the necessity that students should have access to a botanical account of the plants which furnish the substances used medicinally in different parts of the world, daily becomes more urgent; and hence the work now presented to the public makes its appearance.

Under existing arrangements it is chiefly from systematical works treating of the British Flora, that the student of Botany derives his acquaintance with species; and as but a small number of the plants found wild in this country are either officinal, or of much medical value, he is practically excluded from any acquaintance with those important exotic species which it is most desirable for him so to study as to recognise them when he sees them. The student therefore who is really anxious to study Botany for those great purposes which render it so indispensable a branch of medical science, has been obliged to remain satisfied with such general knowledge as he can obtain

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from books like the author's *Natural System of Botany*. His examination in practical Botany becomes alarming to him because he is necessarily ill-prepared to meet it; and when passed, all but the theory of the science is too apt to quit his memory, from the want of definite points upon which his attention can be permanently fixed.

But there is another reason which has induced the author to take up the investigation of medical plants. All persons at all conversant with Materia Medica, are aware how conflicting are the statements found in books, and made in conversation, respecting the sources from which medicinal plants, often of the commonest kind, are derived.

For instance, one writer says that *Cubebs* are obtained from Sierra Leone, where Piper Cubeba does not grow: another refers the origin of this pepper, in Bourbon, to Piper caudatum, which is a Brazilian, not an African species; a third asserts that Cubebs come from Java, and are the fruit of Piper caninum, not of P. Cubeba. *Cascarilla* bark is assigned by one writer to Croton Cascarilla, by another to C. pseudo-china, and by a third to C. Eleuteria. *Rhubarb* has been said by different writers to be the root of Rheum palmatum, R. undulatum, and R. Emodi; and in all these cases the assertion has been made with equal confidence. According to one author *Sarsaparilla* is the root of Smilax officinalis; to another, of Smilax medica; to a third, of Smilax aspera; to others, of a species called S. Sarsaparilla. I have even heard it stated with great confidence, that of the few kinds of vegetable drugs admitted into the last edition of the Pharmacopœia of the College of Physicians, twelve are referred to plants which certainly do not produce them; and that twenty-six others have been assigned to their sources with more or less inaccuracy. As the greater part of these differences of opinion can be more readily settled by Botanical investigation than by Pharmaceutical evidence, the author trusts that it will not be thought presumptuous in him to have made the attempt, although he is not a medical man.

In executing his task he has been much embarrassed to determine within what limits to confine it. To be guided by the last edition of the London Pharmacopœia, or by any other work of the same description, would have manifestly been inexpedient, because all such books are from their very nature circumscribed, and confined in their application to some particular place. To have thus limited the present work, would have entirely defeated one of the first objects set before himself by the author in the execution of it — the indication of what remedial agents are employed in other countries, but not yet introduced into English practice. No one will be bold enough to assert that the physician already possesses the most powerful agents produced by the vegetable kingdom; for every year is bringing some new plant into notice for its energy, while others are excluded because of their inertness. In tropical countries, where a fervid sun, a humid air, and a teeming soil give extraordinary energy to vegetable life, the natives of those regions often recognise the existence of potent herbs unknown to the European practitioner. No doubt such virtues are often as fabulous, and imaginary, as those of indigenous plants long since rejected by the sagacity of European practice. But we are not altogether to despise the experience of nations less advanced in knowledge than ourselves, or to suppose because they may ascribe imaginary virtues to some of their officinal substances, as has been abundantly done by ourselves in former days, that therefore the remedial properties of their plants are not worth a serious investigation; or that their medical knowledge is beneath our notice because they are unacquainted with the terms of modern science. It is not much above twenty years since an English officer in India was cured of gonorrhœa by his native servant, after the skill of regular European practitioners had been exhausted: the remedy employed was Cubebs, the importance of which was previously unknown, and the rationale of whose action is to this day beyond the discovery of physiologists. It is of undoubted value in urethral catarrh: and who shall

say that there are not hundreds of equally powerful remedies still remaining to be discovered. Look to Hemidesmus indicus, the source of Indian Sarsaparilla, the most active medicine of that name now known to the English physician, although excluded from the Pharmacopœia; to Chloranthus officinalis, unrivalled in Java for its aromatic properties and powerful stimulating effects; to Soymida febrifuga, Galipea officinalis, and Cedrela Toona, which, at least, rival the Jesuit's bark in their influence over the most dangerous fevers; to Erythroxylon Coca one of the most active stimulants of the nervous system; or, finally, consider the accounts we have of the effects of Jamaica Dogwood, Piscidia Erythrina, which, if there is any truth in medical reports, must be a narcotic superior to opium for many purposes; and it must be sufficiently apparent to all unprejudiced minds, that the resources of the vegetable kingdom, far from being exhausted, have hardly yet been called into existence. It is presumptuous for the theorist to assert that he already possesses a remedy "for all the maladies that flesh is heir to;" it is mere idleness in the routine practitioner, carried away by the attraction of specious generalities, to fancy that one tonic is as good as another tonic, or one purgative as another purgative. In reality the true cause of the different actions of medicines upon the human body is admitted by the highest authorities to be wholly unknown; and surely this is in itself the best of all reasons why we should not assume that we already possess against disease all the remedies which nature affords; on the contrary, it should stimulate us to reiterated enquiries into the peculiar action of new remedial agents.

The medical student rarely knows, at the time when he is acquiring his professional education, what his after destiny will be. A large proportion of the young men who frequent the class-rooms are scattered to all the corners of the earth; they are perpetually liable to be cut off from supplies of the drugs of the Pharmacopœia, and then are driven upon their own resources; and they find the medicines

which are powerful in Europe, comparatively inactive in other climates. The heat of a country, its humidity, particular localities, food, and the social habits of a people will predispose them to varieties of disease for which the drugs of Europe offer no sufficient remedy, and will render that which is relied upon in one country unworthy of dependence in another. Thus the Cinchona bark of Peru, important as it is in Europe, is, we are told, rejected by the people among whom it grows, because it is found too stimulating and heating for their excitable constitutions. And speaking of Ipecacuanha Dr. Von Martius, who so carefully examined practically the Materia Medica of Brazil, asserts "nullum est dubium quin Emetica in terris zonæ fervidæ subjectis effectus producent multo magis salutares quam in regionibus frigidioribus."

This last observation seems to indicate, that if emetic plants are so much more common in hot than cold countries; it is because there is so much greater a necessity for them. The late Mr. Burnett, and many other persons, have asserted that every country spontaneously furnishes remedies for those maladies which the people of the soil are naturally subject to, and that the foreign drugs imported into the markets of Europe would soon be superseded to a great extent, if the properties of European plants were carefully examined. It is contended, in illustration of this opinion, that Salicine, obtained from our native Willows is equal in energy to Quinine, and that it is formed by Providence in low marshy places, exactly where remittent and intermittent fevers are experienced most frequently, and with the greatest severity. It is not for the author to offer an opinion upon a point of this sort; his business here is only with facts, or what are believed to be facts. It is, however, deserving of notice, that if England is already found to yield species of such powerful action as Hellebore, Hemlock, Henbane, Belladonna, Stramonium, Foxglove, Willow bark, Holly leaves, Spurge Laurel, Centaury, Colchicum, Bryony, Ergot, and many more, it becomes probable that other powerful agents still remain to be

discovered in this country. Such a subject of investigation is by no means unimportant, when it is considered how wretchedly inadequate in too many cases is the remuneration of medical men, and how much the practitioner would often be relieved, if his expenses could be diminished by the substitution of domestic remedies, to be had for the trouble of getting them, in place of exotic drugs which are not only costly, but often so much adulterated as to be unfit for use. When we consider the quality of much of the Scammony, Sarsaparilla, Senna, and even Rhubarb that are sold in the shops, it is surely not extravagant to expect that they should often be advantageously rejected for some of the plants which grow almost at our doors. Our marshes are overrun with the Iris Pseudacorus, an active purgative and emetic; Ranunculus Flammula another common plant is described by Dr. Withering, the introducer of Digitalis into practice, as the best of all known emetics; and the common Lilac, which, although not a native, is to be found in every garden, has fruit which in its unripe state is singularly bitter, and yields an extract spoken of as a remarkably good tonic and febrifuge.

They were considerations of this kind which decided the author to include in his work all the plants whether indigenous or exotic, and whether officinal or not, the properties of which were sufficiently well attested to deserve particular notice. Those plants have however been omitted, whatever their reputation may have been, against the efficiency of which medical opinion has been distinctly and generally expressed. Such exceptions as may be found to this rule, have usually been made for purposes connected with the lecture-room, or for the sake of calling attention to plants whose properties seem to deserve further investigation.

It by no means follows that plants are inert because medical men have reported unfavourably of their action. The most powerful species have had their energy destroyed by unskilful preparation, or by not knowing at what season

to collect them. Orfila says, "We were one day in the shop of an apothecary who had several times furnished us with extract of hemlock, which we had administered to dogs, to the dose of 10 drachms without producing any serious accident. We endeavoured to prove to him that the medicine was badly prepared, and in order to convince him effectually, we swallowed, in the presence of several persons who happened to be in his shop, a drachm of this extract (72 grains) dissolved in two drachms of water. We felt no ill effect from it, whilst 20 to 30 grains of the extract, well prepared, would probably have proved fatal to us." This observation upon the badness of shop preparations of this drug is confirmed by Mr. Pereira; and Dr. Christison considers it absolutely necessary to begin the inquiry into its effects anew, the preparations hitherto employed being of very little energy, or absolutely inert. Dr. Hancock makes the same remark upon shop Sarsaparilla.

If it should appear that many exotic plants have been admitted, the importance of which is possibly not greater than that of many European plants which have been rejected, it should also be considered, that the latter have been expelled from practice upon definite grounds, and that no such careful investigation of the former has yet been made; moreover, the very nature of the climate of tropical countries generally causes the properties of plants to be more concentrated and completely elaborated than in northern latitudes. It may possibly be said that numerous species have been admitted, the properties of which are dietetic or poisonous rather than medicinal. In noticing alimentary plants the author has followed the example of the College of Physicians who admit Barley, Wheat, Oats, Arrow-root, Sago, &c. into the Pharmacopœia; and he has endeavoured to select such alimentary plants only as furnish the diet of a sick person. With respect to poisons it is to be remembered that the energy which renders them dangerous if taken in excess, may also cause them to be, in the hands of skilful prac-

titioners, most valuable remedial agents. A medical man should also be aware of their existence, as he may at any time be called upon to counteract their effects.

In arranging his materials the author has generally noticed at greatest length those plants which he supposes to be most important; while others are either very shortly described, or only mentioned by name. It will be found, that the technical descriptions have been carefully framed in accordance with the existing state of Botanical knowledge, and according to the most approved rules of modern science. The student will therefore be able to use them as models upon which to familiarise himself with the art of descriptive Botany. Nevertheless, it has not been thought necessary to provide in all cases original descriptions; and consequently although a great many are so, many others are only amended, altered, or corrected from the works of other Botanists. In such a collection of facts as this is much originality can hardly be expected; it will however be found, upon reference to the articles Cinchona, Croton, Rheum, Convolvulus, and others, that original investigation has not been neglected when it seemed to be required.

It will be generally found that the authorities for the medicinal properties ascribed to species are those of the writers whose works are quoted among the Botanical references; if it is not so the exact authority for a statement is usually expressly mentioned.

For the convenience of those who may wish to use this work as a catalogue of the contents of the Medicinal department of a Botanic Garden, all the species are numbered consecutively; and it is intended that the same numbers should be preserved, in case the work should ever reach a second edition; all additions being introduced with letters after the numbers next to which they may be placed. This intimation is given for the satisfaction of those who may be desirous of combining the advantage of a catalogue with the information the work contains.

In the present state of systematical Botany no two

writers upon classification can agree respecting the exact sequence in which the natural orders of plants should follow each other. By some the plan of Jussieu is adopted, by others that of De Candolle, and by many the systems of Endlicher, of the author of this work, of Von Martius, of Schultz, or even of Reichenbach may be preferred. This can only be accounted for upon the supposition that the systems of all these authors are equally false. To enable the reader of this book to suit his own convenience in the arrangement of the matter, the work is so printed that the different natural orders may be cut asunder and re-arranged at the pleasure of the possessor; some space has necessarily been sacrificed to this object, but it is hoped that a corresponding degree of convenience will attend it. The scheme is, however, only a matter of experiment, and will be abandoned hereafter if it should appear not to be of general advantage. As the work leaves the publisher's hands the sequence of matter corresponds with that of the author's Natural System of Botany, because it will probably be that preferred by the majority of readers in this country.

It only remains to notice the sources from which the information contained in this work has been procured. As all the Pharmacological works of most repute have been occasionally more or less consulted, it may appear almost invidious to name any one in particular from which such information has been gleaned more than from others. It is, however, an act of the merest justice to say, that the valuable work of Guibourt, the excellent lectures on Materia Medica by Mr. Pereira, published in the Medical Gazette, and Dr. Royle's various writings have furnished the author with the most valuable part of his information upon doubtful points.

London, *June* 14. 1838.

ABBREVIATIONS.

*** The greater part of the references in the following pages will be sufficiently intelligible. Those only which are subjoined seem to require explanation.

DC. De Candolle.

EB. English Botany.

HBK. Humboldt, Bonpland, and Kunth.

N. and E. Nees and Ebermaier.

R. and S. Römer and Schultes.

S. and C. Stevenson and Churchill's Medical Botany.

W. and A. Wight and Arnott.

Woodv. Woodville's Medical Botany.

FLORA MEDICA.

RANUNCULACEÆ.

Nat. syst. ed. 2. p. 5.

CLEMATIS.

Involucre 0, or resembling a calyx below the flower. Sepals 4–8 coloured, valvate. Petals 0 or shorter than the sepals. Achenia numerous, terminated by a long feathery hardened, tail-like style. Seed pendulous. — Perennials usually with permanent half-shrubby stems. Leaves exactly opposite.

The species of this genus are generally acrid, and raise blisters when applied in a fresh state to the skin; but they lose the property by drying or exposure to heat. The following have been more particularly noticed: —

1. C. erecta *All. ped. No.* 1078. *DC. prodr.* i. 2. —C. recta *Linn. sp. pl.* 767. *Jacq. austr.* t. 291. — Hills and woods in the south of Europe.

Stem herbaceous, erect, about 2 feet high, somewhat angular, striated, nearly smooth. Leaves opposite, pinnated with 2 pairs and an odd one, smooth above, hairy beneath; leaflets ovate, acuminate, stalked, entire. The leaves are occasionally simple, cordate and angular, and not unfrequently ternate. Umbels irregular, terminal, panicled, quite erect. Pedicels downy. Sepals linear-obovate, white, spreading, downy, much longer than the stamens. Ripe carpels seldom more than 2 to each pedicel, ovate, brown, smooth, with a feathery tail. — Much recommended by Störck in obstinate cachectic diseases; the powdered leaves have been also used as an escharotic.

2. C. Flammula *Linn. sp. pl.* 766. *DC. prodr.* i. 2. — Hedges and thickets in the south of Europe and North of Africa.

Stem climbing and forming large entangled masses of angular, slightly downy half-herbaceous branches. Leaves pinnated; segments smooth, entire or 3-lobed, orbicular, oval, oblong, or nearly linear, somewhat acute. Flowers small, white, in large loose panicles, extremely fragrant. Petals $\frac{1}{2}$–$\frac{3}{4}$ inch long, linear, obtuse, downy, much longer than the stamens. Carpels extremely shaggy. — Leaves used as vesicatories.

3. C. Vitalba *Linn. sp. pl.* 766. *Fl. Lond.* t. 37. *Eng. Bot.* t. 612. *Smith Eng. fl.* iii. 39. — Αμπελος αγρια, *Dioscorid.* Αγριοαμπελι, *Modern Greek.* — Common in hedges and thickets all over the middle and south of Europe; also in the Crimea. (Traveller's joy.)

Stem woody, angular, climbing to a great extent, or pendulous, branched, entangled, supported on other shrubs by the permanent, hardened, twining footstalks. Leaves deciduous; their leaflets 5, stalked, heart-shaped, pointed, finely hairy, either quite entire, unequally cut, or coarsely serrated. Panicles axillary and terminal, forked, many-flowered, downy. Flowers white, with a sweet almond-like scent. Petals 4, most downy on the outside. Carpels with long feathery tails. — Both fruit and leaves acrid and vesicant; dangerous taken internally. The latter have been used as a rubefacient in the treatment of rheumatism.

4. C. dioica *Linn. sp.* 765. *DC. syst.* i. 143. *prodr.* i. 4. *Macfady. fl. jam.* i. 2. — (*Sloane* t. 128. f. 1.) — Lower hills of Jamaica.

A large rambling shrub, with furrowed purplish branches. Leaves ternate; leaflets ovate, rather heart-shaped, acuminate, smooth, sometimes confluent. Flowers small, greenish, diœcious, panicled. Pedicels downy. Sepals oblong, downy, reflexed. Stamens the length of the sepals. Carpels downy, terminated by a long feathery tail. — Leaves hot and acrid; bruised and applied to the skin they act as a rubefacient or even blister. An infusion of the bruised leaves and flowers forms a good lotion for the removal of spots and freckles from the skin. A decoction of the root in sea water is said to act as a powerful purge in hydropic cases. *Macfadyen.*

5. C. Mauritiana *Lam. dict.* ii. 42. — Used by the negroes in the Isle of France to raise blisters on the cheek to allay the pain of toothach. *Commerson.*

ANEMONE.

Involucre of 3 leaves, a short distance below the flower; its leaflets cut. Sepals 5–15, petaloid. Petals 0. Achenia either ending in tail-like styles, or tailless.

6. A. Pulsatilla *Linn. sp. pl.* 759. *Fl. dan.* t. 153. *Eng. Bot.* t. 51. *DC. prodr.* i. 17. — Dry woodland ground and open hills all over Europe, and in Siberia: flowering early in the spring.

Leaves pinnated; segments many-parted, with linear lobes, hairy, sometimes quite shaggy. Flower slightly nodding, usually purple, but varying to many other colours of the cyanic series. Sepals 6, spreading. Fruit with long bearded tails. — The powder of the root causes itching of the eyes, colic, and vomiting, if in pulverising it the operator do not avoid the fine dust which is driven up. Bulliard relates the case of a man who, in consequence of applying the bruised root to his calf for rheumatism, was attacked with inflammation and gangrene of the whole leg. *Christison.* An extract has, however, been used in obstinate cases of tænia.

7. A. pratensis *Linn. sp. pl.* 760. *Fl. dan.* t. 611. *Woodv. med. bot.* t. 148. *D C. prodr.* i. 17. — Pulsatilla nigricans *Störck lib. de pulsat.* — Open fields and plains in dry places in many parts of Europe, Russia, and Turkey in Asia; flowering early in the spring.

Leaves pinnated; segments many-parted, with linear lobes. Flower pendulous. Sepals 6, erect, reflexed at the point. It differs from A. pulsatilla according to De Candolle in the flower being smaller and pendulous, not nearly erect, and of a deeper colour; in the sepals being narrower and more pointed, erect and converging at the base, reflexed at the point. In both species, stalked glands, or sterile stamens, are found between the fertile stamens and the sepals. — Störck recommends an extract or infusion in chronic ophthalmia, and in old syphilitic disorders.

8 A. cernua *Thunb. fl. jap.* 238. *DC. prodr.* i. 16. *Siebold fl. jap.* i. 14. t. 4. — Exposed parts of the Mountains of Japan. (Hak-too-woo of the Chinese.)

Leaves pinnated; the lower segments on long stalks, all pinnatifid, with cut linear-oblong acute segments; the younger silky on each side, the old ones villous only on the under side. Involucre multifid. Flower nodding. Sepals bright brownish red, downy on the outside, erect, oval, acute. — Root in great reputation among the Japanese and Chinese, as a bitter medicine.

According to Christison 9. A. *hortensis*, and 10. A. *coronaria*, are also among the most active of the poisonous species: 11. A. *nemorosa* less active; and 12. A. *hepatica*, and 13. A. *alpestris* bland.

HYDRASTIS.

Sepals 3, ovate. Petals 0. Stamens and ovaries numerous. Drupes, capitate, terminated by a style, 1-celled, 1-2-seeded. Seeds obovate, polished.

14. H. canadensis *Linn. sp. pl.* 784. *DC. prodr.* i. 23. *Hooker in Bot. mag.* t. 3019. *Bart. mat. med.* ii. t. 26. — Warnera canadensis *Mill. ic.* t. 285. — Shady woods in rich soil in the United States and Canada. (Yellow root.)

Rhizoma tortuous, knotty, creeping, of an intensely yellow colour, affording a dye of the same tint, bitter, somewhat pungent and tonic. Stem erect, herbaceous, rounded, about a foot high, simple, hairy upwards, bearing two leaves of which, the lower is petioled, the other sessile. Leaves palmate, with 3 or 5 deep inciso-serrated segments, hairy, dark green. Peduncle solitary, terminal, about 2 inches long, single-flowered. Flowers small. Calyx of 3 deciduous, broadly-ovate, pale greenish-white, concave, slightly-downy sepals. Stamens many longer than the pistils. Filaments flat, linear-lanceolate, having the cells of the anther on their edge at the apex. Pistils several; ovary oval, glabrous, attenuated upwards into a short style. Stigma obtuse, scarcely lobed. The fruit resembles a raspberry, is red, and consists of many little 2-seeded drupes collected into a globose head, and each crowned with the persistent style. — Rhizoma has a strong narcotic

smell, is exceedingly bitter, and valuable as a strong tonic. The power of curing cancers, which has been ascribed to it, is imaginary. Its brilliant yellow colour has been made use of by dyers.

KNOWLTONIA.

Sepals 5. Petals 5–15, with the unguis naked. Stamens numerous. Ovaries numerous, placed on a globose receptacle. Fruits numerous, 1-seeded, succulent, not pointed by the style, which is deciduous.

15. K. vesicatoria *Sims. bot. mag.* t. 775. *DC. prodr.* i. 23. — Adonis vesicatoria *Linn. f. suppl.* 272. — Cape of Good Hope.

A plant with the aspect of an apiaceous (umbelliferous) perennial. Leaves biternate; the segments somewhat cordate, rigid, smoothish; the lateral obliquely truncate at the base. Umbel nearly simple, few-flowered. — Leaves used as vesicants at the Cape of Good Hope.

ADONIS.

Sepals 5, erect. Petals 5–15, with the unguis naked. Stamens numerous. Achenia numerous, 1-seeded, arranged upon a long receptacle, ovate, tipped with the permanent style.

The roots of the perennial species are said by Pallas to be emmenagogues. The following may be taken as a representation of the only 4 species that are yet known.

16. A. vernalis *Linn. sp. pl.* 771. *Bot. mag.* t. 134. *DC. prodr.* i. 24. — A. appennina *Linn. sp. pl.* 772. *Jacq. austr.* i. 44. — Siberia, the Crimea, and many parts of Europe in alpine situations.

Radical, or lowest leaves, abortive, reduced to sheathing scales; the upper sessile, multifid, with the lobes entire. Petals 10–12, bright-shining yellow, oblong, somewhat toothed. Carpels velvety.

RANUNCULUS.

Sepals 5. Petals 5, occasionally 10, with a nectariferous excavated scale at the base. Stamens and ovaries numerous. Achenia ovate, somewhat compressed, mucronate; arranged on globose or cylindrical receptacles.

The species are in almost all cases acrid, and when bruised, quickly produce blisters; but the latter are apt to spread and to run into ill-conditioned ulcers difficult to heal. Hence they are excluded from regular practice. All the acridity is destroyed by drying or by heat.

17. R. bulbosus *Linn. sp. pl.* 778. *Flora Lond.* i. t. 38. *Eng. Bot.* t. 515. *Bigel. med. bot.* iii. t. 47. *DC. prodr.* i. 41. — Common in pastures all over Europe and in the United States.

Cormus fleshy, roundish, depressed, sending out radicles from its under side. In autumn it gives off lateral bulbs near its top, which

afford plants for the following year, while the old cormus decays. Stems several, erect, round, hairy, branching. Root leaves on long petioles, ternate, sometimes quinate; the segments variously cut, lobed and toothed, hairy; stem-leaves sessile, ternate, the upper ones more simple. Flowers several on a stem, solitary, of a bright glossy yellow. Peduncles furrowed, angular, hairy. Sepals oblong, hairy, bent back against the peduncle. Petals 5, inversely heart-shaped. Stamens numerous, yellow, with oblong erect anthers. Ovaries numerous with reflexed stigmas. Receptacles spherical. Carpels acute, naked, diverging, with recurved points. — Exceedingly acrid, raising blisters and producing extensive inflammation, sometimes followed by deep ill-conditioned sloughing ulcers in certain constitutions, but not affecting all persons alike, in which respect it resembles the poisonous species of Rhus and Antiaris. Gilibert states that it vesicates with less pain than cantharides, and without affecting the urinary passages. *Plant. Rar. Lith. No.* 331.

18. R. Thora *Linn. sp. pl.* 775. *Jacq. fl. austr.* v. t. 442. *DC. prodr.* i. 30. — Θηλυφονον, *Theophrastus.* Ακονιτον παρδαλιαγχης, *Dioscorides.* — Rocks and meadows on mountains near the limits of perpetual snow, in the alps of Europe.

Leaves quite smooth; those next the root which are stalked, and those on the stem which are sessile, reniform and crenated, those next the flowers cut. Stem 2–3-flowered; flowers smooth. Carpels ovate, but little compressed, pointed with the style, loosely collected into a roundish head. — Root extremely acrid and poisonous; the juice formerly used by Swiss hunters to envenom their weapons; wounds so produced are said to have become speedily fatal.

19. R. sceleratus *Linn. sp. pl.* 776. *Fl. Dan.* t. 371. *Fl. Lond.* t. 42. *Eng. Bot.* t. 681. *DC. prodr.* i. 34. *Smith Eng. fl.* iii. 48. — In wet ditches and by the side of water all over Europe; in Siberia, the Crimea, the Levant, Cochin China, India, North America.

Root fibrous. Herb juicy, various in luxuriance, from 6 inches to 2 feet high, of a pale shining green, very smooth, except occasionally the flower stalks and upper part of the stem, which are now and then hairy. Stem thick, round, hollow, repeatedly branched, leafy. Lower leaves stalked, rounded, bluntly lobed and cut; upper sessile, with deeper and narrower segments; uppermost of all, accompanying the flowers, lanceolate, undivided. Flowers small, pale yellow, numerous, on solitary stalks, either terminal, axillary, or opposite the leaves. Calyx hairy, reflexed. Petals orbicular. Gland somewhat tubular. Fruit cylindrical, obtuse, various in length, composed of numerous small carpels. *Smith.* — Leaves said to be used by beggars to produce ulcers. Krapf found that 2 drops of the juice, or a bit of a leaf or flower, produced acute pain in the stomach, and a burning in the throat; but when diluted, it became innocuous, so that half a drachm in 6 ounces of water might be taken without danger.

20. R. acris *Linn. sp. pl.* 779. *Eng. Bot.* t. 652. *Woodv.* t. 246. *Smith Eng. fl.* iii. 52. *S. and C.* ii. t. 82. — Common in meadows and pastures everywhere in Europe.

Root from a somewhat tuberous crown, with many long simple fibres. Stem 2 feet high, erect, round, hollow, leafy, clothed with close-pressed hairs; branched above, and many flowered. Radical leaves on long upright hairy footstalks, in 3 or 5 deep lobes, which are variously subdivided and cut, more or less hairy; stem-leaves nearly sessile, with fewer and narrower segments; uppermost much smaller, in 3 linear entire lobes; or sometimes simple and linear. Flowers bright yellow, on round even stalks, covered with close hairs, and not furrowed. Calyx hairy, spreading, deciduous. Carpels lenticular, smooth, with a small slightly curved point. *Smith.* — Extremely acrid. Mr. Curtis says, that even pulling up the plant and carrying it a little way, has produced inflammation of the hand.

21. R. glacialis *Linn. sp. pl.* 777. *Jacq. coll.* i. t .8, 9. *DC. prodr.* i. 30. — Among rocks near the limits of perpetual snow, on the alps of Europe; Lapland; and Iceland.

Radical leaves stalked, palmated, 3-parted or trifid; the lobes rather blunt and thick. Stem usually 1-flowered. Calyx extremely shaggy. Petals white. Carpels compressed, sharp-edged. — The mountaineers of Dauphiny call this "Carline," or "Caralline," and employ an infusion of it in hot water as a powerful sudorific in cold and rheumatism.

22. R. Flammula *Linn. sp. pl.* 772. *Fl. Dan.* t. 575. *Eng. Bot.* t. 387. *DC. prodr.* i. 32. *S. and C.* ii. t. 82. — Wet places in Europe, Asia, Barbary and North America.

Plant quite smooth. Stem rooting at the base, then decumbent, afterwards rising up, branched, leafy, hollow; sometimes hairy near the top. Leaves on flat channelled half-sheathing stalks, alternate usually ovate-lanceolate, but varying much in breadth, often serrated. Flowers terminal and opposite the leaves, on smooth round naked peduncles. Petals bright yellow, much larger than the spreading calyx, which is often rather hairy. Carpels small, smooth. — Leaves vesicant. The distilled water said by Withering to be an emetic more instantaneous and less offensive than sulphate of zinc. He even prefers it to any other known emetic.

HELLEBORUS.

Sepals 5, permanent, rounded, blunt, large, often herbaceous. Petals 8–10, very short, tubular, nectariferous, narrowed to the base. Stamens 30–60. Ovaries 3–10. Stigmas terminal, orbicular. Capsules leathery; seeds arranged in two rows, elliptical, umbilicated.

23. H. niger *Linn. sp. pl.* 783. *Jacq. fl. austr.* t. 201. *Bot. mag.* t. 8. *Woodv. med. bot.* t. 18. *S. and C.* i. t. 11. — Subalpine woodland regions in the midland and southern parts of Europe. (Christmas Rose.)

Rhizoma black, tuberculated, horizontal, scaly, with many dependent fibres, whitish internally. Leaves all radical, on cylindrical stalks from 4–8 inches long, pedate, quite smooth, and almost evergreen, of a strong firm texture, pale green and shining above, paler and strongly reticulated beneath; lobes cuneate-obovate entire and unequal at the

base, coarsely serrated near the point. Scape shorter than the petiole 1-2-flowered, with ovate lacerated bracts immediately beneath the calyx. Sepals 5, ovate or roundish, large, white slightly tinged with pink, eventually becoming green. Petals green, tubular, shorter than the stamens. Carpels 6-8, follicular, many seeded. — Similar in effect to H. orientalis; and long supposed to be the genuine black hellebore of the ancients. It is a narcotic acrid poison. Many cases of the fatal employment of this root are recorded. Two persons having taken a decoction of it, were seized in 45 minutes with vomiting, then with delirium, and afterwards with violent convulsions. One died in 2 hours and a half, the other in less than 2 hours. It is a dangerous drastic, and is employed as an emmenagogue and hydragogue. The fibres of the rhizoma are the part used.

24. H. orientalis *Gars. exot.* t. 19. *f. B.* *DC. prodr.* i. 46. *S. and C.* ii. t. 87. — Ελλεβορος μελας, *Dioscorides.* H. officinalis *Fl. Græc.* t. 583.— Mountainous broken ground in Greece and the Levant.

Rhizoma black, thick, with cylindrical fibres. Radical leaves stalked pedate, downy beneath; their segments almost sessile, oblong, acutely serrulate. Stem taller than the leaves, corymbose, 3-5-flowered. Floral leaves subsessile, palmated; the lobes 3-5, oblong, acute, serrulate. Calyx purple, with oval, very blunt, sepals. Capsules 5.— The root was formerly much celebrated in mania, epilepsy, and dropsy. It is still used in the Levant, and is called "Zoptême" by the Turks, Σκαρφη by the Greeks. It is acrid and violently cathartic.

25. H. viridis *Linn. sp. pl.* 784. *Fl. Lond.* t. 34. *Eng. Bot.* t. 200. *DC. prodr.* i. 47. — In the woods and thickets of Europe on a chalky soil.

Rhizoma fleshy, black, with numerous long stout fibres. Leaves bright deep green, quite smooth, pedate; the cauline ones subsessile and palmate; the segments oblong, undivided, entire at the base, somewhat serrated at the apex. Stems often forked, 1½ foot high. Flowers few, terminal, and axillary, stalked, mostly solitary, drooping, green in every part. Sepals roundish-ovate. Capsules 3-4, short, wrinkled.— This is said by Stevenson and Churchill to be the best substitute for H. orientalis, though less active. Mr. Pereira says it is rarely or never employed.

26. H. fœtidus *Linn. sp. pl.* 784. *Woodv.* t. 19. *Eng. Bot.* t. 613. *DC. prodr.* i. 47. *S. and C.* i. t. 21. — Thickets and waste ground, chiefly in a chalky soil in the more western parts of Europe.

Stem leafy, many-flowered. Leaves stalked, pedate, of a livid green colour, quite smooth, with linear-oblong or lanceolate serrated segments; the upper ones gradually losing their blade, and changing into pale lanceolate, entire bracts. Flowers numerous, panicled, drooping. Petals nearly erect, stained with dull purple about the edges. — Similar in effects to H. niger. The leaves are emetic and purgative. They have been strongly recommended as a vermifuge against the large round worm (Ascaris lumbricoides). *Pereira.*

COPTIS.

Sepals 5–6, coloured, petaloid, deciduous. Petals small, cucullate. Stamens 20–25. Capsules 6–10, on long stalks, somewhat stellate, membranous, ovate, oblong, tipped with the style, 4–6-seeded.

27. C. trifolia *Salisb. Linn. trans.* viii. 305. *Bigelow med. Bot.* i. t. 5.— Helleborus trifolius *Linn. sp. pl.* 784. *Fl. dan.* t. 566. *Amœn. acad.* ii. t. iv. f. 18. — Dark sphagnous swamps in Canada and Siberia, and mountains to the southward. (Gold thread.)

Rhizomata, from which the name of *gold thread* is taken, perennial, filiform, creeping, of a bright yellow colour, running in every direction. New stems invested at the base with a number of yellowish, ovate, acuminate scales. Leaves ternate, on long slender petioles; leaflets roundish, acute at base, lobed and crenate, smooth, firm, veiny; the crenatures acuminate. Scape slender, round, bearing one small, starry white flower, and a minute, ovate, acute bract at some distance below. Sepals 5, 6, or 7, oblong, concave, white. Petals 5, 6, or 7, inversely conical, hollow, yellow at the mouth. Stamens numerous, white, with capillary filaments and roundish anthers. Ovaries from 5 to 7, stipitate, oblong, compressed; styles recurved. Capsules stalked, oblong, compressed, beaked, with numerous black oval seeds.— Its rhizomata afford a pure tonic bitter of great value, resembling quassia, gentian, and calumba, without astringency.

NIGELLA.

Sepals 5, coloured petaloid, spreading, deciduous. Petals small, 5–10, bilabiate, with a hollowed nectariferous claw. Stamens numerous. Ovaries 5–10, more or less united at the base, terminated by long simple styles. Capsules more or less consolidated, beaked with the styles, opening by the ventral suture, polyspermous; with the putamen, which is membranous, separating from the sarcocarp, and forming a large spurious cell in the interior of each carpel. — Leaves capillary, multifid, often surrounding the flowers like an involucre.

28. N. sativa *Linn. sp. pl.* 753. *Fl. Græc.* t. 511. *DC. prodr.* i. 49. — N. segetalis *Bieb. taur. cauc.* ii. 16. Μελανθιον, *Dioscorides.*— South of Europe, Barbary, the Levant, the Crimea, Egypt, India, in fields.

Stem erect, 1–2 ft. high, many-flowered, finely downy, especially near the ground. Leaves capillary, cut into numerous fine segments, not involucrating the flower; petioles downy. Flowers naked, dirty white. Anthers ovate, obtuse. Capsules muricated, united up to the very point into an ovate fruit, terminated by 5 erect styles. Seeds angular. — Seeds aromatic, subacrid; they were formerly employed instead of pepper, and have also been used as carminatives.

DELPHINIUM.

Sepals deciduous, petaloid, irregular: the upper prolonged at the back into a spur. Petals 4; the two upper extended at the base into appendages inclosed within the spur.

29. D. Consolida *Linn. sp. pl.* 748. *Fl. Dan.* t. 683. *Eng. Bot.* t. 1839. *DC. prodr.* i. 51. — Corn fields all over Europe; also the Crimea, and North America, where it has possibly been introduced.

Root simple, slender. Herbage downy, especially the stem and capsule. Stem 1½–2 feet high, erect, leafy, with alternate spreading branches. Leaves sessile, in many deep divisions, which are 3-cleft and subdivided into narrow linear acute segments. Racemes terminal, lax, of but few flowers. Bracts simple or divided, longer than the pedicels. Flowers bright blue or purple. Corolla monopetalous; two spurs combined in one. Seeds angular, black, very rough. — A tincture of the seed in doses of 20–30 drops has been recommended in asthma; it produces slight nausea, but in over doses is injurious. The leaves and stalks are said to enter into the composition of some cosmetics, which, although efficient at first, are found by continued use to be very destructive to the skin. *Burnett.*

30. D. Staphisagria *Linn. sp. pl.* 750. *Fl. Græc.* t. 508. *Woodv.* t. 154. *S. and C.* i. t. 55. — Σταφισαγρια, *Dioscorides.* — Waste places in the south of Europe, the Levant, and the Canaries.

A stout upright herb. Stems and petioles hispid with long soft hairs. Leaves broad, palmated, stalked, 5–9-cleft. Pedicels hairy, at least an inch long. Bracts inserted at their base. Flowers in lax racemes, bluish gray: the petals dirty white; the two lower spathulate. Spur hardly two lines long. Capsules 3, large, villous. Seeds globose, 3-cornered, thick, black, with an acrid taste. — Seeds extremely poisonous. They owe this quality to a peculiar alkali called Delphinia. They are emetic, drastic, and inflammatory, never used internally; are said to be useful in scabies and fungous ulcerations; but are chiefly used in destroying pediculi in the head.

ACONITUM.

Sepals petaloid, irregular, deciduous or withering, the upper sepal concave and helmet-shaped. Petals 2, on long stalks, prolonged at the apex into a bag hidden beneath the helmet.

The powerful acrid properties of the root in this poisonous genus probably pervade all the species, and have certainly been recognised in many. The following examples are the most notorious. A large number of those which stand as species in the writings of systematic botanists are mere varieties of a very unimportant description. De Candolle has reduced many of them to their legitimate rank; but he has by no means carried the reduction far enough. According to that botanist, the species which belong to the section Napellus are the most fearful in their effects; and those akin to that of Anthora, the least so.

Sect. I. Anthora.

Root turnip-shaped. Leaves divided into many linear lobes. Flowers light yellow, sometimes variegated with blue. Sepals persistent. Helmet convex or semicircular. Ovaries 5.

31. A. Anthora *Linn. sp. pl.* 751. *Jacq. austr.* t. 382. *Reichenbach aconit.* — Anthora vulgaris *Clus. hist.* ii. p. 98. f. 2. — Thickets in the mountainous parts of Europe; Siberia.

All the parts more or less downy. Stem from 6 inches to 2 feet high, simple or branched at the upper part. Leaves palmate, repeatedly cut into linear acuminate divisions. Flowers racemose or panicled. Sepals and petals permanent. Petals with scarcely any bag, a thick spiral spur, and a long lip. Filaments scarcely winged. Fruit deep green, smooth or downy. — Root extremely poisonous, similar in action to that of A. Napellus.

The following reputed species appear to be mere varieties of A. Anthora; viz., A. Pallasii, grandiflorum, Jacquini, nemorosum, Decandollii, anthoroideum, eulophum, and versicolor.

Sect. II. Lycoctonum.

Root fibrous. Leaves with incised wedge-shaped lobes. Flowers pale yellow or white, seldom purple or variegated. Sepals deciduous. Helmet long, conical, obtuse, with scarcely any point in front. Ovaries 3.

32. A. Lycoctonum *Linn. sp. pl.* 750. *Jacq. austr.* t. 380. *DC. prodr.* i. 57. — Ακονιτον λυκοκτονον, *Dioscorides.* A. lycoctonum vulgare flore luteo, *Clus. hist.* ii. p. 94. f. 1. — Mountainous woods and grassy meadows of France, Germany, Sweden, Lapland, Hungary and Italy.

A most variable plant, out of which a multitude of spurious species have been derived by Reichenbach; many of the varieties are very different from each other at first sight, but pass gradually into each other through intermediate forms. Some are possibly hybrids. Stem smooth or downy, from 2 to 4 feet high. Lobes of leaves more or less wedge-shaped, sometimes simply trifid and scarcely incised; sometimes very much cut; and, in some cases, divided halfway down into narrow diverging segments. Flowers in lax or dense, simple or branched racemes, usually light yellow. Helmet gradually sloping upwards into a cone, not abruptly hollowed out in front, sometimes with a lengthened apex, sometimes with scarcely any, very variable in the degree of downiness. Spurs of the petals usually spiral, but often merely curved, and in some forms of the species very short and blunt. — The poisonous roots have been used to destroy wild beasts; this is, however, reputed less venomous than many other species.

Sect. III. Cammarum.

Roots turnip-shaped, intermixed with fibres. Leaves with rhomboidal or wedge-shaped incised lobes. Flowers blue or white. Racemes lax, somewhat corymbose. Sepals deciduous

Helmet compressed, much lengthened upwards and rounded, terminated by a short apex. Ovaries 3–5. The plants of this division are only known from the Napelli by their helmet being more lengthened.

33. A. paniculatum *Lam. fl. fr. ed.* 1. *suppl.* 1224. *DC. prodr.* i. 60. — Lycoctonum autumnale vii. *Clus. hist.* ii. p. 98. A. Napellus officinale *Störck de aconit.* — Broken mountainous ground in the alps of Europe.

Stem erect, smooth. Leaves divided in 3 nearly down to the petiole; the segments cuneate at the base, the side ones 2-parted whence the leaf looks as if 5-cleft; the segments acuminate, sharply pinnatifid and slashed. Raceme lax, corymbose, erect. Pedicels downy, the lowest long and branched. Bracteolæ subulate. Flowers pale blue, smooth. Wings smooth inside. Helmet convex, more acuminate than in the Napelli, but scarcely with an abrupt point, *DC.* — Leaves are moderately bitter, acrid and narcotic: they are diaphoretic and diuretic; but in overdoses they are exceedingly dangerous, producing vomiting, hypercatharsis, mania, convulsions and death. The extract, or the aconitine, are used in chronic rheumatism, gout, paralysis, dropsy, &c. The roots are more dangerous than the leaves. Dr. Thomson says that for medicinal purposes the leaves should be gathered when the flowers appear. (Dispens. p. 168.) Is not this much too early?

Sect. IV. Napellus.

Roots fibrous, from a somewhat tuberous trunk. Leaves with multifid lobes and linear segments. Raceme cylindrical simple. Flowers blue purple or white never yellow. Helmet convex, by degrees tapering to a point.

34. A Napellus *Linn. sp. pl.* 751. *Woodv.* t. 6. *Eng. Bot.* t. 2730. *S. and C.* i. t. 28. — A. Lycoctonum vi. Napellus vulgaris, *Clus. hist.* ii. p. 96. f. 2. A. vulgare *DC. prodr.* i. 62. — High mountainous meadows, and cold exposed hills in many parts of Europe.

Variable in the breadth of the leaves, the number of the slashes, and in the downiness of the various parts. Stems always quite simple. Leaves completely divided to the base into 5 wedge-shaped lobes, which are 3-fid; their segments being also slashed linear and acute usually callous at the re-entering angles. Raceme cylindrical quite simple. Flowers deep purple, hairy. Helmet semicircular, gradually ending in a point. Wings hairy inside. Ovaries 3, smooth. — A true narcotico-acrid poison. Numerous fatal cases of its application are recorded; see Christison, p. 784. Three out of five persons who took a spirituous infusion of the root, which had been mistaken for lovage, died in 2 hours, with vomiting, purging, and burning in the throat, colic, and swelling of the belly. Like the last it has been found sudorific and diuretic in small repeated doses, and has been used in paralysis and epilepsy, rheumatic and neuralgic pains, dropsy, uterine complaints, intermittent fevers, &c. The leaves are the part employed.

A crowd of spurious species has been created out of this very common and variable plant. It would be useless even to name them.

35. A. ferox *Wall. in DC. prodr.* i. 64. *plant. as. var.* i. 35. t. 41. — A. virosum *Don prodr. fl. nep.* 196. — Himalaya mountains; Gossain Than, Sirmore, Kamaon. (Bish or Bikh.)

Tubers 2 or 3, fasciculate, fusiform, 2–4 inches long, blackish, white inside. Stem erect 2–3 feet high, smooth at the base, slightly downy upwards. Branches villous. Leaves roundish-cordate, deeply 5-parted; lobes incised, pinnatifid, cuneate at the base, generally hairy along the veins on the under side. Raceme terminal, long, downy. Flowers large, deep blue, hoary with hairiness. Helmet gibbous, semicircular, about an inch long, with a short acumen in front. Cucullate petals cylindrical, narrow, slightly incurved. — A dreadfully poisonous root, equally fatal when taken into the stomach or applied to wounds. Its action is similar to that of A. Napellus, only more virulent. It is used in cases of chronic rheumatism by Indian practitioners. Mr. Pereira found that a drop of the spirituous infusion applied to the tongue produced a numbness which remained for 18 hours.

ACTÆA.

Sepals 4–5, imbricated, petaloid, regular. Petals 0. Stamens numerous; the exterior dilated and sterile. Carpels solitary, baccate, indehiscent, many-seeded. Seeds compressed, angular, smooth, horizontal.

36. A. spicata *Linn. sp. pl.* 722. *Eng. Bot.* t. 918. *Fl. Dan.* t. 498. *DC. prodr.* i. 65. — Bushy mountainous situations in Europe, Caucasus, and Siberia. (Baneberry.)

Stem erect, leafless, and scaly at the base. Leaves twice or thrice ternate with ovate-lanceolate, serrated or slashed segments. Pedicels the length of the flowers, scarcely thickened when in fruit. Sterile stamens spathulate, obtuse. Fruits roundish, black. — Fruit poisonous. Roots antispasmodic, expectorant, astringent; they are reported to have afforded very marked relief in cases of catarrh. *Burnett.*

XANTHORHIZA.

Sepals 5, deciduous. Petals 5. Carpels 2–3-seeded, by abortion 1-seeded.

37. X. apiifolia *L'herit stirp.* i. 79. t. 38. *Barton. mat. med.* ii. t. 46. *DC. prodr.* i. 65. — Mountains in the southern parts of the United States.

A small deciduous shrub, from 2 to 3 feet high. Root horizontal, throwing up numerous suckers. Wood bright yellow. Leaves pinnate, of about 3 pairs with an odd one; leaflets ovate or rhomboidal, slashed and serrated, sometimes divided almost to the base on one side, pale green, smooth above slightly pubescent beneath. Racemes axillary, pendulous. Flowers small, dull purplish-brown. Petals obovate, 2-lobed. Ovaries 5–9. Capsules inflated, compressed, 1-celled, 2-valved, opening at the apex. Seeds oval, flattened. — Both wood and bark a pure, tonic, very intense bitter. It agrees well with the stomach, and has been said to be superior to Calumba.

PÆONIA.

Sepals 5, leafy, unequal. Petals 5-10, roundish. Stamens numerous. Disk fleshy surrounding the ovaries. Carpels 2-5, with double thick stigmas. Follicles fleshy, many-seeded. Seeds numerous, dry, round.

38. P. officinalis *Retz. obs.* iii. 35. *Bot. mag.* t. 1784. *DC. prodr.* i. 65. — Παιονια θηλεια, *Dioscorides*, according to *Sibth.* Γλυκυσιδη θηλεια, *Dioscorides*, according to *Spreng.* —Woods and groves in various parts of Europe, especially in the south.

Herbaceous. Carpels downy nearly, straight. Segments of the leaves unequally slashed, smooth, with ovate-lanceolate lobes. — Seeds emetic and cathartic. Root reportd to be antispasmodic.

39. P. corallina *Retz.* is said to be the Παιονια or Γλυκυσιδη αρρην of *Dioscorides*.

PODOPHYLLEÆ.

Nat. syst. ed. 2. *p.* 7.

PODOPHYLLUM.

Sepals 3. Petals 6–9. Stamens 12–18. Fruit fleshy, 1-celled, many-seeded, crowned by the crenated sessile stigma.

40. P. peltatum *Linn. sp. pl.* 722. *DC. prodr.* i. 111. *Bigelow med. bot.* ii. t. 23. *Barton mat. med.* ii. t. 25. — Low shady situations in the United States. (May Apple, Mandrake in North America.)

Rhizoma jointed, about half the size of the finger, spreading extensively in rich grounds, where it gets introduced. Stem about 1 foot in height, and invested at its base by the sheaths which covered it when in bud; smooth, round, erect, dividing at top into two round petioles from 3 to 6 inches long; each petiole supports a large peltate palmate leaf, smooth above, slightly pubescent beneath, deeply divided into about seven lobes, which are wedge-shaped, 2-parted, and toothed at the extremity. In barren stems which support but one leaf, the peltate character is most perfect. Flower solitary in the fork of the stem, on a round nodding peduncle 1 or 2 inches long. Sepals 3, oval, obtuse, concave, cohering in the bud by their scarious margins, and breaking off at the base, when the flower expands. Petals from 6 to 9, but more frequently 7, even in luxuriant specimens; obovate, obtuse, concave, smooth, white, with slight transparent veins. Stamens shorter than the petals, curving upwards; anthers oblong, twice as long as their fila-

ments. Ovary oval, compressed, obscurely angular. Stigma nearly sessile, convex, its surface rendered irregular by numerous convolutions and folds. Fruit fleshy, oblong-ovate, yellowish, as large as a pigeon's egg, 1-celled, many-seeded, crowned with the stigma. — A very valuable, sure, and active cathartic. The rhizoma is administered in fine powder. The leaves are poisonous, and the whole plant narcotic.

PAPAVERACEÆ.

Nat. syst. ed. 2. p. 7.

PAPAVER.

Sepals 2, convex, deciduous. Petals 4. Stamens numerous. Style 1. Stigmas 4–20, radiating sessile upon the crown of the ovary. Capsule 1-celled, spheroidal, opening by pores beneath the lobes of the stigma. Placentæ opposite the stigmatic lobes, many-seeded.

41. P. Rhœas *Linn. sp. pl.* 726. *Eng. Bot.* t. 645. *DC. prodr.* i. 118. *S. and C.* i. t. 31. — Hedges and corn fields in all parts of Europe.

Capsule obovate, smooth. Sepals hairy. Stem many-flowered, somewhat rough, with spreading setæ. Leaves pinnatifid, with elongated slashed toothed acute lobes. — The beautiful red petals are employed in the preparation of the "Syrupus Rhœados" of the pharmacopœia, useful merely as a colouring matter. The plant is not known to be narcotic. *Pereira.*

42. P. somniferum *Linn. sp. pl.* 726. *Lam. ill.* t. 451. *N. and E. Handb.* iii. 446. *plant med.* t. 404. *Woodv.* t. 185. *Eng. Bot.* t. 2145. *S. and C.* iii. t. 159. — P. officinale *N. and E. Handb.* iii. 446. *Pl. med.* t. 405. Μηκων, *Dioscorides;* αγρια, *when the seeds are black;* ἡμερος, *when the seeds are white.* — Fields of the Levant, and south of Europe; cultivated in many of the warmer parts of the world.

Stem erect, smooth, rather glaucous, 3-4 feet high. Leaves amplexicaul, slashed, repand, with rather blunt teeth. Petals very large, dull dingy pale lilac or white with a deep dull purple spot at their base, or no spot. Capsules obovate or globose, smooth, about the size of a middling apple, rather hard and brittle, with numerous parietal placentæ, covered with kidney-shaped, oily, sweet and eatable seeds.—From the wounded half-ripe capsules flows a juice which concretes into opium, the well-known powerful narcotic drug. From the dried capsules the decoction, syrup and extract of poppies are prepared. Mr. Pereira justly observes, that these capsules or "heads" would be more active if gathered before ripeness: when full grown and just when the first change of colour is perceptible should be the best time to collect them. The seeds are not narcotic, but yield a bland oil similar to that obtained from olives. I see no ground for considering the P. officinale of N. and E. any thing beyond a variety of no importance.

ARGEMONE.

Sepals 2-3, muricated. Petals 3-6. Stamens numerous. Styles scarcely any; stigmas 4-7, radiating, concave, distinct. Capsule obovate, 1-celled, opening by valves at the apex, with linear placentæ. Seeds spherical, pitted.

43. A. mexicana *Tourn. elem.* 204. t. 121. *Linn. sp. pl.* 727. *Bot. Mag.* t. 243. *DC. prodr.* i. 85. *Macfadyen, Fl. Jam.* 20. — Mountainous plains; Mexico; Louisiana; United States; West Indies, Brazil, St. Helena, Cape of Good Hope, Mauritius, Java, Bengal, Sandwich Islands.

Annual. Stem somewhat glaucous, erect, terete, rather naked of leaves, bristly with firm stiff hairs. Leaves alternate, sessile, glaucous, oblong, repand, sinuated, with prickly angles. Peduncles axillary, short, 1-flowered. Sepals 2 or 3, prickly, deciduous, concave at the point, awned. Petals 4 or 6, yellow, large, crumpled. Stamens about 20, as long as the ovary which is oblong, 3-angular and bristly. Stigmas 4–6, reflexed. Capsule oblong, angular, bristly. Seeds roundish, compressed, scrobiculate. — Dr. Barham says that this plant is called *Figo del inferno* by the Spaniards, because of the powerful narcotic effects of the seeds, which are stronger than opium. Dr. Affleck states, that an emulsion prepared from them acts first as an anodyne and afterwards as a purgative. Dr. Macfadyen denies these effects; but Mr. Huggins says that in Nevis the oil obtained from the seeds is used as a substitute for castor oil. *Med. Bot. Trans.*, 1829, p. 1. This is confirmed by Dr. Michael Short. The juice is employed in India in chronic ophthalmia and in primary siphilitic sores. The infusion is said to be diuretic, and to give relief in strangury from blisters.

SANGUINARIA.

Petals 8–12. Stamens 24. Stigmas 2. Capsule oblong, 2-valved, ventricose, acute at each end, with deciduous valves, and 2 permanent placentæ.

44. S. canadensis *Linn. sp. pl.* 723. *Bot. Mag.* t. 162. *Bigelow med. bot.* i. t. 7. — An early spring flower in most parts of the United States and Canada, in woods. (Puccoon, Blood root, Red root, &c.)

Smooth throughout. Rhizoma creeping, emitting a bright orange juice when cut. Leaves radical, solitary, on long channelled petioles; reniform or heart-shaped, with large roundish lobes, separated by obtuse sinuses. The under side strongly reticulated with veins, paler than the upper, and at length glaucous. Peduncles solitary, axillary, round, 1-flowered, infolded by the young leaf. Sepals 2, concave, ovate, obtuse, falling off when the corolla expands. Petals 8, spreading, concave, obtuse, the external ones longer, so that the flower has a square appearance. This is its natural character, although cultivation sometimes increases the number of petals. Stamens numerous, with oblong yellow anthers. Ovary oblong, compressed; style none; stigma thick, somewhat 2-lobed. Capsule oblong, acute at both extremities, 2-valved. Seeds numerous, roundish, compressed, dark shining red, half surrounded by a white vermiform raphe. — An acrid narcotic. In small doses it lowers the pulse, in smaller still it has some reputation as a tonic stimulant. Powder of the rhizoma acts violently as an emetic; is a useful escharotic in cases of soft polypi; has been recommended in typhoid pneumonia, phthisis, croup, hydrothorax, jaundice, &c.

CHELIDONIUM.

Sepals 2. Petals 4. Stamens numerous. Capsule long, 2-valved, 1-celled, with the valves opening from the base to the apex. Seeds with a glandular crest. — Evergreen tender perennials, with an acrid yellow juice.

45. C. majus *Linn. sp. pl.* 723. *Eng. Bot.* t. 1531. *Fl. Dan.* t. 676. *DC. prodr.* i. 123. *S. and C.* ii. t. 86. *Woodv.* t. 263. — Shady places all over Europe. (Celandine.)

A biennial. Stem 2 feet high, branched, swelled at the joints, leafy, round, smooth. Leaves smooth, very deeply pinnatifid, their lobes in 2 or 3 pairs, the terminal one largest, all rounded, bluntly lobed and notched; the lateral ones sometimes dilated at their lower margin, near the base, almost as if auricled; their colour a deep shining green. Flowers bright yellow, umbellate, on long, often hairy stalks. Calyx tawny, often hairy. Seeds black and shining, each with a whitish deciduous crest.—The juice is a violent acrid poison. It has been regarded medicinally as stimulating, aperient, diuretic, and sudorific, it was also considered a powerful deobstruent. It is a popular remedy for warts, and has been employed successfully in opacities of the cornea.

FUMARIEÆ.

Nat. syst. ed. 2. *p.* 9.

FUMARIA.

One petal only gibbous or spurred at the base. Achenium 1-seeded, its style dropping off after flowering.

46. F. officinalis *Linn. sp. pl.* 984. *Eng. Bot.* t. 589. *DC. prodr.* i. 130. — A common weed, in dry waste ground.

An annual glaucous weed. Stem much branched, spreading, often recumbent, leafy, angular. Leaves mostly alternate, twice or thrice pinnate; leaflets wedge-shaped, with flat lanceolate segments. Racemes opposite to the leaves, stalked, erect, many-flowered, rather lax. Bracts lanceolate, acute, not half the length of the flower-stalks, especially when in fruit. Flowers rose-coloured, or pale red, deep red at the summit, with a green keel to the upper and under petals. Spur very short, rounded. Calyx coloured, toothed, deciduous. Fruit globose, emarginate. — Herbage bitter, slightly diaphoretic and aperient; the juice was formerly administered in cutaneous diseases and obstructions of the liver.

ORYDALIS.

Petals 4, one only spurred. Pod 2-valved, compressed, many-seeded.

47. C. tuberosa *DC. fl. fr.* iv. 637. *prodr.* i. 127. — Fumaria cava, *Mill. dict.* vii. *Bot. Mag.* t. 232. and t. 2340. — Hedges in the south of Europe.

Stem simple, not scaly. Leaves 2, biternate, with cuneate, slashed, multifid segments. Bracts ovate entire. Root hollow.

48. C. fabacea *Pers. synops.* ii. 269. *DC. prodr.* i. 127. — Fumaria fabacea *Retz. prodr.* ed. 2. No. 859. *Fl. Dan.* t. 1394. — Shady mountainous places in Sweden, Denmark, and many other parts of the Continent of Europe.

Stem nearly simple, erect, bearing one scale below the lowest leaf. Leaves 3–4, stalked, biternate, with oblong bluntish segments. Bracts ovate, acute, longer than the pedicel. Root solid. — The root of both these is very bitter, and rather acrid. It is the *radix aristolochiæ* of the continental shops, and is principally employed as an external application to indolent tumours.

NYMPHÆACEÆ.

Nat. syst. ed. 2. *p.* 10.

NUPHAR.

Sepals 5–6, petaloid, hypogynous, permanent. Petals 10–18, hypogynous, much smaller than the sepals, secreting honey from their back. Stamens numerous, hypogynous, springing with elasticity from the ovary about the time of flowering. Capsule dry, indehiscent, 10–18-celled, crowned by a stellate peltate stigma, with the same number of rays. Seeds indefinite in number.

49. N. lutea *Smith prodr.* i. 361. *DC. prodr.* i. 116 — Νυμφαια, *Theophrastus.* Νυμφαια αλλη or Νουφαρ *Dioscorides.* Nymphæa lutea *Linn. sp. pl.* 729. *Eng. Bot.* t. 159. — In rivers and ponds in all parts of Europe; also in the United States.

Petioles obscurely triangular, smooth. Leaves cordate oblong, floating, bright green on each side; with the auricles approximated. Peduncles taper. Flowers yellow. Sepals 5, green at the back, very obtuse. Petals much smaller. Stigma quite entire, of a firm cartilaginous or horny texture, always yellow, with as many as 20 rays. — Root-stock slightly poisonous; beetles and cockroaches are said to be killed by its infusion in milk; it has been reputed sedative and anti-aphrodisiac.

NYMPHÆA.

Sepals 4, arising from the side of the ovary. Petals 16–28, perigynous, gradually diminishing towards the centre and then changing into numerous perigynous stamens. Capsule dry, indehiscent, 16–20-celled, with a sessile peltate stigma having the same number of rays; covered over by the withered sepals and petals. A papilla in the centre of the peltate stigma.

50. N. alba *Linn. sp. pl.* 729. *Eng. bot.* t. 160. *Fl. Dan.* t. 602. *DC. prodr.* i. 115. — Σιδη, *Theophrastus.* Νυμφαια, *Dioscorides.* — The waters of all parts of Europe; also in the United States (?).

Petioles taper, smooth, long in proportion to the depth of water. Leaves ovate-orbicular, deeply cordate at base, quite entire, furnished beneath with a broad prominent midrib and 7 radiant veins on each side; the auricles approximated and obtuse. Pedicels like the petioles. Flowers white. Flowerbuds ovate-oblong, somewhat square at the base. Sepals 4, green externally, white inside. Petals 28, namely in 7 rows of 4 each, adhering to the ovary, and in decaying leaving 7 spiral lines of stars around the ovary. Stamens numerous, the ex-

ternal somewhat abortive. Capsule the size of a small apple, with 16 cells and membranous dissepiments. Seeds horizontal or deflexed, obovate, red, marked with rows of small dots, surrounded as far as the base with a white cup-shaped arillus, and enveloped in a gelatinous gluten. — Root-stock astringent, styptic, and slightly narcotic. It has been prescribed in dysentery, and is occasionally chewed by singers to relieve the relaxation of the uvula.

51. N. odorata *Willd. sp. pl.* ii. 1153. *Bot. Mag.* t. 819. *Bot. Repos.* t. 297. *Bigelow med. Bot.* ii. t. 55. — Rivers and ponds in the United States.

Petioles somewhat semicircular, perforated throughout by long tubes or air-vessels which serve to float them. Leaves floating, peltate, nearly round, with a cleft or sinus extending to the centre. The lobes on each side prolonged into an acute point; bright glossy green above, reddish beneath, and marked by a multitude of strong prominent veins diverging from the centre. Sepals 4, lanceolate, green without, and white within. Petals numerous, lanceolate, of a delicate whiteness, with sometimes a tinge of lake on the outside. Stamens numerous, yellow, in several rows; filaments dilated, especially the outer ones, so as to resemble petals. Anthers in 2 longitudinal cells growing to the filaments, and opening inwardly. Stigma with from 12 to 24 rays, very much resembling abortive anthers, at first incurved, afterwards spreading. At the centre is a solid hemispherical protuberance. — Stems extremely astringent, and sometimes used in the composition of poultices, answering a purpose similar to that of lead poultices and alum curds. *Bigelow.*

EURYALE.

Calyx prickly, superior, 4-cleft. Petals numerous, spreading, diminishing towards the centre, not changing into stamens. Stamens numerous, in several rows, obtuse, with oval anthers. Ovary 6–8-celled; cells 5-seeded. Stigma concave, distinct, 6–8-rayed, with as many notches. Fruit baccate, covered with the decaying sepals and petals; many seeded, arillate.

52. E. ferox *Salisb. ann.* bot. 2. 73. *DC. prodr.* i. 114. — Anneslea spinosa *Bot. rep.* x. t. 618. *Roxb. fl. ind.* ii. 573. — Lakes and ponds in the country east of Calcutta.

Leaves floating, peltate, orbicular or oval, from 1 to 4 feet in diameter, slightly prickly above, very much so and bright purple beneath, with projecting anastomosing veins; petioles and peduncles armed with stiff straight prickles. Flowers small. Calyx armed externally with recurved prickles. Petals a light blue violet. Berry the size of an orange, swelling irregularly, containing about 20 seeds enveloped in a complete, fleshy, rose-coloured aril.—Seeds farinaceous; much eaten by the natives when roasted or rather baked. The Hindoo physicians consider them possessed of powerful medicinal virtues, such as restraining seminal gleets, invigorating the system, &c. *Roxb.*

MYRISTICACEÆ.

Nat. syst. ed. 2. *p.* 15.

MYRISTICA.

Flowers diœcious. Calyx urceolate, 3-toothed. ♂. Filaments monadelphous; anthers 6-10, connate. ♀. Ovary simple; style none; stigma 2-lobed. Pericarp fleshy, 2-valved, 1-seeded. Seed enveloped in a fleshy aril.

53. M. officinalis *Linn. suppl.* 265. *Gærtn. carpol.* i. t. 41. f. i. *Hook. exot. fl.* tt. 155. 156. *Bot. Mag.* tt. 2756. 2757.— M. moschata *Thunb. Woodv.* t. 134. *S. and C.* ii. t. 104. M. aromatica *Lam. illustr.* t. 832. *Roxb. corom.* iii. t. 267.— Moluccas, especially the island of Banda. (Nutmeg tree.)

A diœcious tree; trunk from 20 to 25 feet high; bark greyish-brown, tolerably smooth, abounding in a yellow juice. Leaves aromatic, from 3 to 6 inches long, subbifarious, oblong, approaching to elliptical, glabrous, rather obtuse at the base, acuminate, quite entire, above dark-green and somewhat glossy, beneath much paler, but neither pulverulent nor downy. Petioles from ½ to ¾ of an inch long, plane above. Racemes axillary, subumbellate, sometimes forked or compound. Peduncles and pedicels glabrous, the latter having a quickly deciduous, ovate bract at its summit, often pressed close to the flower. Male flowers, 3 to 5 or more on a peduncle. Calyx urceolate, thick and fleshy, clothed with a very indistinct reddish pubescence, dingy pale yellow, cut into three, erect, or erecto-patent teeth. Filaments incorporated into a thickened, whitish cylinder, about as long as the calyx, the upper half covered by about 10 linear-oblong 2-celled anthers, free at their base, opening longitudinally. Female flowers scarcely different from the male, except that the pedicel is very frequently solitary. Pistil solitary, shorter than the calyx, broadly-ovate, a little tapering upwards into a short style, and bearing a 2-lobed persistent stigma. Fruit fleshy, nearly spherical, of the size, and somewhat of the shape of a small pear; flesh astringent, yellowish, almost white within, 4 or 5 lines thick, opening into two, nearly equal, longitudinal valves. Arillus thick, between horny and fleshy, much lacerated, folded and anastomosing towards the extremity, enveloping the nut almost entirely, and so tightly as to form inequalities on its surface; when fresh, brilliant scarlet; when dry, much more horny, of a yellow-brown colour, and very brittle. Nut broadly ovate, or oval; the shell very hard, rugged dark-brown, glossy, about half a line thick, pale and smooth within. Seed or nutmeg oval, pale brown, quite smooth when first deprived of its shell, but soon becoming shrivelled, so as to have irregular, vertical lines or furrows on its surface. Albumen firm, but fleshy, whitish, but so traversed with red-brown veins, which abound in oil, as to appear beautifully marbled. Near the base of the albumen, and imbedded in a cavity

in its substance, is the embryo, which is small, fleshy, yellowish-white, rounded below, where is the radicle; its cotyledons of 2, large, somewhat foliaceous, plicate lobes, in the centre of which is seen the plumule. — The seed is the nutmeg of the shops, the aril is the mace. They contain a volatile oil which renders them stimulant. In small quantities they relieve flatulence, and allay colicky pains but in large quantities they excite the circulation and act as narcotics. *Pereira.*

MAGNOLIACEÆ.

Nat. syst. ed. 2. p. 16.

MAGNOLIA.

Carpels arranged in compact spikes, opening by the outer angle, 1-2-seeded, persistent. Seeds baccate, somewhat cordate, hanging down from the carpel by the aid of a long umbilical cord.

54. M. glauca *Linn. sp. pl.* 755. *Mich. arb. forest.* iii. 77. *Bigelow med. bot.* ii. t. 27. — Common in the morasses of the middle and southern states of America, where it is called "Swamp Sassafras, Beaver tree," &c.

Bark of the young twigs of a bright smooth green, scarred with rings at the insertion of the leaves by the fall of the deciduous stipules. Leaves alternate, stalked, regularly elliptical, entire, smooth. Their under side, except the midrib, of a pale, glaucous colour. When young, covered with a silken pubescence. Flowers solitary, terminal, on a short, incrassated peduncle. Sepals three, spatulate, obtuse, concave. Petals 8 to 14, obovate, obtuse, concave, contracted at their base. Stamens numerous inserted in common with the petals on the sides of a conical receptacle; filaments very short; anthers linear, mucronated, 2-celled, opening inwardly. Ovaries collected into a cone, each divided by a furrow, and tipt with a brownish, linear, recurved style. Fruit a cone, consisting of imbricated cells, which open longitudinally at the back for the escape of the seed. Seeds obovate, scarlet, connected to the cone by a funiculus, which suspends them some time after they have fallen out.— Bark bitter and aromatic, resembling and even rivalling in its qualities cinchona. Particularly useful in chronic rheumatism. Tincture of the bark, seeds, and cones, equally efficacious.

LIRIODENDRON.

Carpels arranged in spikes, 1–2-seeded, indehiscent, deciduous, extended into a sort of wing.

55. L. tulipifera *Linn. sp. pl.* 755. *Bot. mag.* t. 275. *Mich. arb. forest.* iii. 202. *Bigelow med. bot.* ii. t. 31. — Forests in the United States. (Tulip tree.)

Leaves roundish, beautifully smooth and bright green, long-stalked, 3-lobed, smooth, with the lateral lobes ovate the middle one truncated; the former in the large leaves, furnished with a tooth or additional lobe on their outside. There is a variety with the lobes of its leaves not pointed, but very obtuse. Flowers large, solitary and terminal. Bracts 2, triangular, falling off as the flower expands. Sepals 3, large, oval, concave, veined, of a pale green colour, spreading at first, but afterwards reflexed. Petals 6, sometimes more, obtuse, concave, veined, of a pale

yellowish green, marked with an irregular indented crescent of bright orange on both sides towards the base. Stamens numerous, with long linear anthers opening outwardly, and short filaments. Pistil a large, conical, acute body, its upper half covered with minute, blackish, recurved stigmas; its lower furrowed, being a mass of coalescing styles and ovaries. Fruit a cone of imbricated seed vessels, which are woody and solid, their upper portion formed by the long lanceolate style. Seeds 2, blackish, ovate, one or both often abortive. — Bark very bitter and strongly aromatic, acting as a stimulating tonic and diaphoretic. Chiefly used in intermittents, and as a warm sudorific in chronic rheumatism.

WINTERACEÆ.

Nat. syst. ed. 2. *p.* 17.

ILLICIUM.

Sepals 3–6, petaloid. Carpels capsular, arranged in a star-like manner, opening at the upper end, 1-seeded. Seed shining. — Evergreen, very smooth, shrubs.

56. I. floridanum *Ellis in phil. trans.* 1770. t. 12. *Bot. Mag.* t. 439. *Bigelow med. bot.* iii. t. 48. *DC. prodr.* i. 77.—Thickets in the country bordering the Gulf of Mexico on the north.

A shrub or small tree. Leaves scattered, or in tufts, on short petioles, evergreen, oval-lanceolate, slightly acuminate, entire, smooth on both sides, and firm or fleshy. The flowers proceed from the sides of the branches at the axils of the last year's leaves, on slender, nodding peduncles, an inch or two long; when fully expanded they are of a dark, purplish crimson. Calyx deciduous. Petals linear, obtuse, in three rows, about nine in a row, the uppermost row ascending, the lowermost descending, and broader or more spatulate. Stamens 30 or more, diverging, flat, depressed, with the anthers recurved; pollen white. Ovaries 12 or more, roundish-rhomboidal, compressed, and arranged in a circular manner; styles short, recurved, pubescent on the inside. — Bark and leaves aromatic and spicy; effects analogous to those of other aromatic barks.

57. I. anisatum *Lour. fl. coch.* 353. *Gærtn. carp.* i. t. 69. — Provinces of China west of Canton. (Star Anise.)

A shrub about 8 feet high; branches smooth, spreading. Leaves ob-ovate, obtuse, entire, smooth, small, crowded, stalked. Flowers yellow, lateral, solitary, stalked. Sepals 6. Petals numerous, spreading. Stamens about 30, placed on the receptacle. Ovaries 8, or more, each with a very short style. Follicles usually 8, ovate-lanceolate, hard and woody, placed horizontally in a circle, 1-seeded; seeds ovate, compressed, brown. — The whole plant, especially the fruit, has a pleasant aromatic flavour of anise; sweetish and rather pungent. It is reckoned a stomachic and carminative among the Chinese, and is used as a spice in their cookery. According to Siebold, this is not the Skimi of Kæmpfer, which is chiefly employed as a perfume by the priests of China and Japan, but a quite distinct species. He calls the former Illicium religiosum. The fruit is aromatic and carminative, and by distillation yields an oil which has most of the properties of oil of anise, for which it is often substituted. It is chiefly used in the fabrication of liqueurs.

WINTERA.

Carpels baccate, many-seeded. Stamens thickest at the apex and having the cells of the anther separate. Calyx of 2-3 sepals, or of 2–3 deep divisions.

58. Wintera aromatica *Murr. syst.* 507. — Drimys Winteri *Forst. gen.* 84. t. 42. *Aug. de St. Hil. Plant. usuelles,* t. 12. *DC. prodr.* i. 78. *S. and C.* iii. t. 178. *Pereira in Med. Gaz.* xx. 177. *fig.* Winterana aromatica *Soland. med. obs.* v. p. 46. t. i. Drymis granatensis *Linn. f. suppl.* 269. *DC. prodr.* i. 78. *Bonpl. pl. æquinoct.* i. t. 58. Drymis chilensis *DC. syst.* t. 444. *Deless. ic. select.* i. t. 83. — Straits of Magellan, Chili, Peru, New Grenada.

An aromatic tree from 6 to 40 feet high. Branches scarred by the traces of fallen leaves. Leaves oblong, obtuse, with a midrib, but otherwise veinless, glaucous, and firmly dotted beneath. Peduncles axillary or somewhat terminal, approximated, usually 1-flowered, simple; occasionally divided a little above the base into long pedicels. Sepals 2–3. Petals 6, oblong. Fruits 4–6, obovate. — The bark, called Winter's bark, is aromatic with a warm and pungent taste. It acts as an aromatic tonic. Under the name of "Casca d'anta," it is much used in Brazil against colic.

Malambo bark has been referred to this genus, but upon insufficient evidence. (See Galipea.)

ANONACEÆ.

Nat. syst. ed. 2. *p.* 18.

XYLOPIA.

Petals 6. Stamens numerous. Torus cup-shaped, bearing the stamens on the outside, the ovaries on the inside. Ovaries numerous, distinct; ovules ascending, in one row, attached to the central angle; stigmas acute, distinct, collected in a cone. Carpels indefinite, ovate, compressed, indehiscent, stalked, 1–4-seeded. Seeds oblique or somewhat erect, more or less surrounded by the adhering pericarp, arillate, ovate.

59. X. longifolia *A. de C. mem. anon.* 34. — Uvaria febrifuga *Humb. and Bonpl.* Unona xylopioides *Dunal monogr.* t. 21. *DC. prodr.* i. 92. — South America on the banks of the Oronoko.

A tree 70 feet high. Leaves oblong, acuminate, silky and shining beneath, revolute at the margin, especially near the base. Peduncles 2–4, axillary, smooth. Three outer petals oblong linear, acuminate, silky, brownish externally, white and excavated in the inside; the 3 interior linear, white, red at the base, 3-cornered at the point. — The fruit, called "Frutta de Burro" is found a valuable febrifuge on the Oronoko. *Humb.*

60. X. glabra *Linn. sp. pl.* 1367. *Dunal. monogr.* t. 19. *DC. prodr.* i. 92. — Barbadoes and Jamaica. (Bitterwood.)

A tree. Branches smooth, scarcely dotted. Leaves, even the youngest, smooth on each side, oblong-ovate, acuminate smooth, on very short stalks. Peduncles 1-flowered, solitary or in pairs, bracteolate. Calyx smooth, trifid, with very obtuse lobes. Carpels smooth. — Wood, bark, and berries warm and bitter, resembling orange seed; considered tonic and stimulant. Burnett says the wood is intensely bitter.

HABZELIA.

Calyx 3-lobed. Petals 6, the inner smallest. Stamens very numerous. Torus convex. Carpels distinct, indefinite in number, long, cylindrical, obsoletely ventricose or torulose, smooth, striated lengthwise, becoming many-celled by the pericarp growing together, many-seeded. Seeds elliptical, arillate, somewhat erect, numerous, shining; one in each of the cells of the fruit. Arillus formed of 2 white unequal obcordate membranes.

61. H. æthiopica *A. de C. mem. anon.* 31. — Unona æthiopica *Dunal. mon.* p. 113. *DC. prodr.* i. 91. Habzeli et piper nigrorum *C. Bauh. pin.* p. 412. — Sierra Leone; palmwoods of Senegambia.

Branches woody, smooth at bottom, slender and velvety at the points. Leaves ovate, acute, 3 in. long, 12–14 lines broad, quite smooth on the upper surface, downy beneath. Flowers unknown. Peduncles of the fruit thick, woody, naked, 4 lines long. Torus of the fruit capitate, 3 lines broad, marked by the scars where the fruit dropped off. Carpels 12–18, pod-shaped, 1–2 inches long, knotted, striated, quite smooth, with the taste of pepper. — Fruit pungent, aromatic, and often substituted for other spices. It is the Piper æthiopicum of commerce.

62. H. aromatica *A. de C. l. c.* 32. — Waria zeylanica *Aubl. guian.* i. 605. t. 243. Unona aromatica *Dunal. mon.* 112. *DC. prodr.* i. 91. — Woods of Guiana.

A tree with a trunk 20 feet high and more. Leaves ovate, acute, smooth, quite entire, subsessile. Flowers solitary or 2 together, downy externally, smooth and violet internally. Fruit 12–20 to each flower, knotted, cylindrical, brownish, with a deep furrow on one side. — Fruit pungent, aromatic, employed by the Blacks in lieu of spice.

MONODORA.

Sepals 3. Petals 6 in 2 rows; the outer lanceolate, the inner ovate. Anthers numerous, subsessile. Ovary 1, ovate, 1-celled, with the whole inside covered by ovules; crowned by a sessile stigma. Fruit smooth, corticated, fleshy, roundish, 1-celled, many-seeded; seeds nestling in pulp.

63. M. myristica *Dunal. monogr.* 80. *DC. prodr.* i. 87. *Hooker in Bot. Mag.* t. 3059. — Anona myristica *Gærtn. carp.* ii. 194. t. 125. f. i. — Supposed to be a native of the west coast of Africa, and thence carried by the negroes to Jamaica.

Leaves alternate, oblong, or sometimes obovate, somewhat cordate, entire, smooth, shining, bright pale green above, 4–5 inches long, 1–2 broad: petioles short, grooved above. Peduncles opposite to the leaves, single-flowered, round, smooth, greenish white, pendulous, 4 to 7 inches long, generally single. Near the summit of the peduncles is a bractea, reflexed when the flower is full blown, subcordate, acute, about 12-veined, green, curled and wavy at the margin, slightly variegated with yellowish red. Flowers fragrant; when beginning to expand, white, marked with purplish-brown spots; afterwards yellow and the spots brighter red. Calyx monophyllous, tube very short, limb deeply cleft into 3 unequal sepals, their margins crisped and waved; the sepal opposite to the bract being shorter and narrower than the other two, which are somewhat coriaceous and ovate-acute. Corolla monopetalous, generally twice as long as the calyx; limb 6-parted in a double series; 3 outer segments oblong-ovate, waved at the margin, of the same colour as the sepals, the ground bright yellow, marked with rows of irregular spots or interrupted stripes of reddish-brown; 3 inner segments, from ½ to ⅓ shorter than the outer, unguiculate, cordate, convex, veined, yellowish-white externally, downy and even at the edges, which adhere slightly, within concave, smooth, shining, pale yellow, variegated with pale crimson spots. Stamens close, in 11–12 rows, on the

receptacle; anthers sessile, spheroidal, yellowish-white, opening on each side rather below the middle, by a roundish pore. Ovary spheroidal, yellowish-white, crowned with a sessile, flattened stigma. Seeds ovate-oblong, angular, by mutual pressure ferruginous. Integuments double. Albumen of the same form as the seed, fleshy, hard, sculptured with deep, nearly parallel lines, and a longitudinal furrow. — Seeds similar in quality to those of the nutmeg, only being rather less pungent.

Many plants belonging to the genera Uvaria, Unona, &c. are medicinally employed in Java, and have powerful aromatic stimulating properties. But Blume remarks that they require to be used with caution, as they are apt to produce vertigo, hæmorrhage, or even abortion in pregnant women.

DILLENIACEÆ.

Nat. syst. ed. 2. *p.* 20.

DAVILLA.

Sepals 5, very unequal, increasing after flowering. Petals 1–6, deciduous. Stamens numerous, placed all round the pistil, with linear filaments dilated upwards. Carpel 1, testaceous, 1–2-seeded, enclosed in the two inner concave, opposite, thickened, valve-like sepals. Seeds solitary, enveloped in an arillus, which is only open at the apex.

64. D. elliptica *A. S. H. pl. us. Bras.* No. 23. *fl. bras. merid.* i. 17. — In carrascos or thickets of Brazil, in the province of Minas Novas. (Cambaïbinha.)

Stem shrubby, erect, much branched; branchlets hairy. Leaves elliptical, obtuse at each end, entire, between crustaceous and leathery, rough and hairless above, downy and netted beneath; petiole villous on the under side. Racemes hairy, bracteolate. Sepals silky. Petals 1–6, somewhat obcordate. Carpels 2. — An astringent; furnishing the vulnerary called Cambaïbinha in Brazil.

65. D. rugosa *Poir. encycl. suppl.* ii. 457. *A. S. H. pl. us.* No. 22. *fl. bras.* i. 18. — D. brasiliana *DC. syst.* i. 405. *Delessert ic.* i. t. 71. — Forests of Brazil. (Cipo de Carijo, Cambaïbinha, Cipo de Caboclo *Brazil.*)

Stem twining; twigs hairy. Leaves oblong, remotely and obsoletely serrated, rough and hairless above, shaggy beneath on the principal veins. Petioles very shaggy beneath. Peduncles and pedicels hairy. Petals 2–3. Carpels usually solitary. — Astringent. A decoction used in Brazil in swellings of the legs and testicles, very common complaints in the hot damp parts of South America.

CURATELLA.

Sepals 4–5, permanent, roundish, unequal. Petals 4–5. Stamens numerous, surrounding the pistil. Carpels 2, roundish. hispid, united at the base, 1-celled, 2-seeded. Seeds obovate, with an arillus.

66. C. Cambaiba *A. de S. H. pl. us.* No. 24. *fl. bras.* i. 22. — In wooded plains, and the deciduous forest ground of Brazil. (Cambaiba *Brazil.*)

Twigs downy. Leaves broad, very obtuse, more or less repand, toothed, rough above, downy beneath. Compound lateral racemes, pedicels, and sepals villous. Petals very deciduous. — Astringent. A decoction used in Brazil as a wash for wounds.

APIACEÆ or UMBELLIFERÆ.

Nat. syst. ed. 2. *p.* 21.

ASTRANTIA.

Tube of calyx with 10 plaited warted ribs, and 5 leafy teeth. Petals erect, converging, oblong-obovate, broken inwards from the middle into a lobe about as long as the petal. Fruit rather compressed from the back. Half fruits without vittæ, with 5 raised plaited toothed inflated ridges, inclosing within their cavity smaller fistular ridges. — Perennials. Root blackish. Radical leaves stalked, palmate, cauline few sessile. General umbel irregular of few rays, with a variable involucre, the partial regular, containing many flowers, with a many-leaved involucre. Flowers white or pink, stalked, not separated by paleæ, often polygamous, the females only being fertile.

67. A. major *Linn. sp.* 339. *Nees and Eberm. pl. med.* 294. *handb.* iii. 62. — Mountainous woods and meadows all over Europe.

Radical leaves palmated; the lobes 5, ovate-lanceolate, acute, somewhat trifid, toothed, fringed with bristles. Bracts 15–20, linear-lanceolate, entire, scarcely longer than the umbel. — Roots acrid and purgative.

ERYNGIUM.

Tube of the calyx rough with scales and vesicles; teeth 5, leafy. Petals erect, converging, oblong-obovate, emarginately broken inwards into a lobe the length of the petal. Fruit in a transv. sect. nearly taper, obovate, scaly or tuberculate, the half-fruits without jugæ or vittæ; the column completely united to the fruit by its whole length. — Herbs, usually perennial and spiny. Radical and cauline leaves more or less sheathing at the base. Flowers collected in roundish or oblong heads. Outer bracts forming the involucre.

68. E. campestre *Linn. sp.* 337. *DC. prodr.* iv. 88. *Fl. dan.* t. 554. *N. and E. med. pl.* t. 295. *handb.* iii. 65. — Common in the dry plains of middle and southern Europe. (Eryngo.)

Radical leaves long-stalked, 3-parted, stiff, with oblong spiny-toothed sessile decurrent 3-lobed segments; cauline sessile 3-parted spiny-toothed. Stem panicled. Leaflets of the involucre linear-lanceolate, pungent, entire, much longer than the hemispherical spiny heads. It sometimes varies with the lower leaves entire or nearly so.

— The root is sweet, aromatic and tonic. Boerhaave reckons it as the first of aperient diuretic roots. It has been recommended in gonorrhœa, suppression of the menses, and visceral obstructions, particularly of the gall bladder and liver; it has also the credit of being a decided aphrodisiac. A good deal of candied root is still sold.

69. E. maritimum *Linn. sp. pl.* 337. has similar properties but in a less degree.

CICUTA.

Teeth of calyx leafy. Petals obcordate, with an inflected lobe. Fruit roundish, double, contracted at the side. Half-fruits with 5 flattish equal ridges, the lateral of which form the border. Channels each with 1 vitta; commissure with 2 vittæ below a loose skin. — Perennial herbs, smooth, aquatic and poisonous. Stem taper, fistular. Leaves tripinnate or ternate. Involucre none, or few leaved; involucels many-leaved. Flowers white.

70. C. maculata *Linn. sp. pl.* 367. *DC. prodr.* iv. 99. *Bigelow med. bot.* i. t. 12. — Common in wet meadows and banks in the United States. (Snakeweed.)

Root composed of a number of large, oblong, fleshy fangs, diverging from the base of the stem, and frequently of the size and length of the finger. It is perennial, and has a strong, penetrating smell and taste. In various parts of the bark it contains distinct cells or cavities, which are filled with a yellowish resinous juice. The plant is from 3 to 6 feet high. Stem smooth, branched at top, hollow, jointed, striated, and commonly of a purple colour, except when the plant grows in the shade, in which case it is green. Leaves compound; the largest about 3 times pinnate, the uppermost only ternate. Most of the petioles are furnished with long membranous sheaths, which clasp the stem. Leaflets, oblong, acuminate, serrate, the serratures very acute or mucronated; the veins end in the sinuses, and not at the points of the serratures. General involucre none. Involucels of very short, narrow, acute bracts. The distinctness or separation of these umbels characterises this plant at a distance among others of its kind, whose umbels are more crowded. Calyx of 5 very minute segments. Petals 5, white, obovate, with inflected points. Fruit nearly orbicular, compressed, 10-furrowed, crowned at top, and separating into 2 semicircular halves. *Bigelow.* — A most dangerous poison resides in its roots; a drachm of the fresh root has killed a boy in an hour and a half; and in America fatal accidents arising from its being mistaken for other apiaceous plants are not uncommon. Has been used as a substitute for conium, with similar effect except that it is more energetic.

71. C. virosa *Linn. sp. pl.* 368. *DC. prodr.* iv. 99. *Eng. Bot.* t. 479. *Nees and Eberm. pl. med.* t. 285. *handb.* iii. 25. *S. and C.* ii. t. 89. *Woodv.* t. 268. *Smith Eng. fl.* ii. 63. — Ditches and river banks through all Europe and Siberia. (Water Cowbane.)

Root tuberous, hollow, with many whorled fibres, and several trans-

verse internal partitions. Stem 2 or 3 feet high, hollow, leafy, branched, furrowed, smooth. Leaves on long footstalks, thrice ternate, bright green; leaflets sharply and deeply serrated, tapering at each end, from 1 to 2 inches long, slightly decurrent; those of the upper leaves more narrow. Umbels large, many-rayed, stalked, partly terminal, partly opposite the leaves; partial ones of very numerous slender rays. General bracts if present very narrow, and seldom more than 1 or 2; but for the most part entirely wanting; partial several, narrow, taper-pointed, unequal. Anthers and styles purplish. Styles bowed, recurved, as long as the fruit, their bases finally a little tumid, and confluent with the receptacle. Fruit spherical, compressed, almost black, smooth, with the dorsal ridges very obscure, and scarcely more than slightly elevated angles. Commissure flat, circular, smaller than the half-fruits. — A dangerous poison, producing effects similar to those of hydrocyanic acid. It appears to cause true tetanic convulsions in frequent paroxysms, and death on the third day. *Christison.* Haller considered it the conium of the Greeks. It appears to be fatal to cattle.

APIUM.

Calyx obsolete. Petals roundish, entire. Disk depressed. Fruit roundish, contracted at the side, double. Half-fruits with 5 filiform equal ridges, of which the laterals form the border. Dorsal channels with single vittæ, lateral with 2–3. — Herbaceous plants with the root thickened at the neck. Stem furrowed, branched. Leaves pinnated, with wedge-shaped cut segments. Umbels axillary or nearly sessile on the apex of the stalk. No involucres. Flowers greenish white.

72. A. graveolens *Linn. sp. pl.* 379. *Eng. Bot.* t. 1210. — Marshes all over Europe, the Caucasus, Mexico, Falkland Islands. (Celery.)

Smooth. Leaves pinnated, the upper 3-parted; lobes wedge-shaped, cut and toothed at the apex. — When wild, growing in wet meadows and in ditches, it is acrid and poisonous; when cultivated in dry ground, and partially blanched, it is the celery well known as a salad.

PETROSELINUM.

Calyx obsolete. Petals roundish, incurved, entire, scarcely emarginate, contracted into an inflexed lobe. Disk short, conical, somewhat crenulate. Styles diverging. Fruit ovate, contracted at the side. Half-fruits with 5 filiform equal ridges, of which the laterals form the border. Channels with 1 vitta, commissure with 2. — Smooth branched herbs. Leaves decompound with wedge-shaped segments. Involucres few-leaved; involucels many-leaved. Flowers white or greenish, uniform, those of the disk often sterile. Stamens longer than the corolla.

73. P. sativum *Hoffm. umb.* i. t. i. f. 2. *Nees and Eberm. pl. med.* t. 283. *handb.* iii. 34. — Apium Petroselinum *Linn. sp. pl.* 379.

— Shady rocks in the south of Europe and the Levant. (Parsley.)

A biennial, or perennial if not allowed to flower, quite smooth, of a bright but rather pale green. Stem 1½–2 feet high, striated, round, a good deal branched in rather a corymbose manner. Radical leaves biternate, on long channelled stalks; leaflets rhomboidal-ovate, wedge-shaped at the base, deeply incised, with the segments mucronate, and sometimes rounded. Upper leaves gradually becoming more entire and narrower, till the uppermost are simply ternate with linear segments. Umbels with 5–8 rays. General involucre none, or 1–2 subulate minute bracts; partial involucre with setaceous bracts, much shorter than the pedicels, erect, forming a perfect whorl. Flowers white, or greenish. Fruit about a line long, compressed, pale greenish brown; the back occupied by 3 elevated, pale primary ridges, the 2 others quite on the margin at the side. — The leaves are a pleasant stimulating salad; they are diuretic, and are at once recognised by their agreeable smell. Burnett says the fruit is a deadly poison to parrots.

PTYCHOTIS.

Calyx a 5-toothed margin. Petals obovate, bifid, emarginate, emitting from the middle a lobe with a transverse streak. Fruit compressed from the side, ovate or oblong. Half-fruits with 5 filiform equal ridges, of which the laterals form the border; channels with 1 vitta. — Annuals or biennials. Cauline leaves multifid, capillary. Umbels compound; universal involucre variable, partial of more bracts than one. Flowers white.

74. P. coptica *DC. prodr.* iv. 108. — Ammi copticum *Linn. mantiss.* 56. *Jacq. hort. vind.* ii. t. 196. — Egypt and Candia.

Stem erect, branched. Leaves almost all cut into linear multifid segments; the upper simply pinnatifid. Umbel with 10–12 rays. Bracts of the involucels linear. Fruit ovate, slightly muricate.

75. P. Ajowan *DC. prodr.* iv. 109.—Ligusticum Ajowan *Flem. in As. res.* xi. 170. *Roxb. fl. ind.* ii. 91. — Cultivated in India.

Root annual. Stem erect, 1 to 3 feet high; branches alternate, smooth, slightly striated. Leaves scattered, those nearest the root supra-decompound, the upper less so; all with filiform subdivisions. Umbels terminal, erect, compound, of from 6 to 8 rays, on rather unequal peduncles; partial, of many rays, on unequal pedicels. Involucres both universal, and partial, of from 5 to 8, linear, unequal, bracts shorter than the umbels. Petals pure white, equal, furrowed on the back, and keeled within, with involute points, and broad waved, rather reflexed margins. Fruit didymous, compressed, broad, ovate, with five scabrous ridges on each side. — The fruit has an aromatic smell, and warm pungent taste. One of the most useful and grateful of the umbelliferous tribe. An excellent remedy in flatulent colic. Much used in India. *Roxb.*

76. P. sylvestris, or *arub ajwain*, is an Indian carminative. *Royle.*

77. P. involucrata, *aneeson* of Northern India, *chanoo* and *raahooni* of Bengal, used by Europeans in India as a substitute for parsley. *Royle.*

SISON.

Calyx obsolete. Petals roundish, curved, deeply emarginate, with an inflexed segment. Styles very short, quickly disappearing. Fruit ovate, compressed at the side. Half-fruits with 5 filiform equal ridges, of which the laterals form the border. Vittæ short, clavate, one in each channel. — An herbaceous plant, with a panicled racemose habit. Leaves pinnated; segments of the lower ones somewhat lobed toothed and cut, of the upper linear multifid. Each involucre few-leaved. Rays of the umbel 4, long, unequal, of the umbellets 4–5, short.

78. S. Amomum *Linn. sp. pl.* 362. *Eng. Bot.* t. 954. — Chalky fields through most parts of Europe. (Honewort.)

Stem about 3 feet high, with rigid wiry branches. Leaves dark-green with ovate, deeply cut, serrated segments, the upper narrower, multifid. — The fruit is pungent and aromatic, but has a nauseous smell of bugs when fresh. It formed the *Semen Amomi* of the old apothecaries.

CARUM.

Calyx obsolete. Petals regular, obovate, emarginate, with an inflexed lobe. Disk depressed. Styles bent down. Fruit contracted at the side, ovate or oblong. Half-fruits with 5 filiform equal ridges, of which the lateral form the border. Vittæ in the channels solitary, on the commissure 2. — Smooth and usually perennial herbs. Root tuberous, eatable. Leaves pinnated, with multifid segments. Involucre variable. Flowers white.

79. C. Carui *Linn. sp.* 378. *DC. prodr.* iv. 115. *Eng. Bot.* t. 1503. *Nees and Eberm. med. pl.* t. 276. *handb.* iii. 21. *Woodv.* t. 45. *S. and C.* i. t. 59. *Smith Eng. fl.* ii. 87. — Meadows and pastures all over middle Europe; not really wild in Great Britain. (Caraway.)

Root tapering. Stem about 2 feet high, erect, branched, leafy, angular and furrowed. Lower leaves nearly a span long, stalked, doubly pinnate, with numerous, opposite, finely cut leaflets, of which the pairs next the midrib cross each other: those on the stem much smaller, opposite, very unequal. Umbels numerous, erect. General bracts, if present, capillary, connected when more than one by a membranous base. Flowers numerous, white, or pale flesh-coloured; the marginal (not central) ones only, perfect and prolific. Calyx always extremely minute, and not constantly complete, or discernible. Pedicels small, convex, in the middle flowers nearly equal. Epigynous disk white, undulated, very distinct from the bases of the styles. Fruit narrow, bright brown, 1½ line long, with pale elevated filiform ridges and shining convex channels. — Similar in action to Dill and Anise; used in the

flatulent colic of children. The oil obtained from it enters as an adjuvant or corrective into various officinal preparations, as the confection of opium, of rue and of scammony, the compound tincture of cardamom and of senna, &c. *Pereira.*

80. Carum nigrum, called "zeera seeah," is imported from Kunawur into India as a carminative. *Royle.*

PIMPINELLA.

Calyx obsolete. Petals obovate, emarginate, with an inflexed lobe. Fruit contracted from the side, crowned by a cushion-like disk, and reflexed somewhat capitate styles. Half-fruits with 5 filiform equal ridges, the lateral of which are on the edge. Channels with many vittæ. — Radical leaves pinnated with roundish toothed segments, very seldom undivided; those of the stem more finely cut. Involucres none. Flowers white, seldom pink or yellow.

81. P. Saxifraga *Linn. sp.* 378. *DC. prodr.* iv. 120. *Eng. Bot.* t. 407. *Nees and Eberm. pl. med.* t. 273. *handb.* iii. 16. *Smith Eng. Fl.* ii. 89. — Dry gravelly and chalky pastures, and rocky ground all over Europe, and the Crimea; also in Persia. (Burnet Saxifrage.)

Root tough and woody, highly aromatic and pungent, not unpleasant. Stems from 1 to 2 feet high, solid, round, striated, very slightly downy, branched. Radical leaves stalked, oblong, pinnate; leaflets, of the lowermost especially, ovate, veiny, deeply serrated and cut; of the upper ones almost entirely wanting, the leaf being represented by a membranous convolute sheath. Umbels of many general and partial smooth rays, drooping when young, either altogether naked, or with one solitary bract to each. Flowers white as well as the seeds. Tumid bases of the styles reddish. Fruit chesnut brown, scarcely more than a line long, narrow, shining, a little tapered to the neck; the ridges sharp, not much paler than the channels. — Root astringent; used as a masticatory to release toothach, and in decoction to remove freckles. *Burnett.*

82. P. dissecta *Retz. obs.* iii. t. 2. *Nees and Eberm. pl. med.* t. 274. *handb.* iii. 17. — P. pratensis *Thuill.* P. laciniata *Thore.* P. magna var. ε. *DC.* — Woods of Europe.

Segments of the upper leaves bipinnatifid, with lanceolate-linear lobes very like the next species. — Effects as in P. Saxifraga.

83. P. magna *Linn. mant.* 217. *Eng. Bot.* t. 408. *Nees and Eberm. handb.* iii. 18. — Pastures, meadows, and mountainous woods all over Europe, and the Levant.

Radical leaves pinnated, with toothed or cut segments having an ovate or oblong outline. — Similar in effect to P. Saxifraga.

84. P. Anisum *Linn. sp.* 399. *DC. prodr.* iv. 122. *Nees and Eberm. pl. med.* t. 275. *handb.* iii. 18. *S. and C.* iii. t. 156. *Woodv.* t. 180. — Anisum officinale *Mœnch. meth.* 100. Sison Anisum

Spreng. in R. and S. vi. 407. Ἄνισον, *Dioscorides.* — Egypt, the island of Scio, the Levant. (Anise.)

Stem smooth, erect, branched. Radical leaves roundish, heart-shaped, lobed, cut-serrated; cauline biternate with linear-lanceolate rather cuneate acuminate segments. Umbels on long stalks, 9–10-rayed, naked; partial ones with a few subulate reflexed bracts. Flowers white. Styles subulate, spreading, long, capitate. Fruit ovate, 1½ line long, dull brown, slightly downy, not at all shining, with the ridges equidistant, elevated, sometimes rather wavy, paler than the channels. Commissure broad and flat.—The officinal preparations, especially the *aqua anisi*, are employed to relieve flatulence, colicky pains, especially of children. Nurses sometimes take it to promote the secretion of milk. It has also been used in pulmonary affections. Its effects are condimentary, stimulant and carminative. *Pereira.*

ŒNANTHE.

Calyx permanent, growing rather larger after flowering. Petals obovate, emarginate with an inflexed lobe. Disk conical. Fruit cylindrical ovate, surmounted by long erect styles. Half-fruits with 5 convex obtuse ridges, of which the marginal ones are a little the broadest; channels with single vittæ. — Usually aquatic herbs. Umbels compound. Common involucre variable, often wanting; partial many-leaved. Flowers of the ray long-stalked, abortive; of the disk sessile or nearly so and fertile. Petals white.

85. Œ. crocata *Linn. sp.* 365. *DC. prodr.* iv. 138. *Eng. Bot.* t. 2313. *S. and C.* i. t. 35. *Smith. Eng. fl.* ii. 71.— Ditches, banks of rivers, wet places, common in the west of Europe. (Dead-tongue, Hemlock-dropwort.)

Root of many fleshy knobs, abounding with an orange-coloured, fetid, very poisonous juice, which also exudes less plentifully from all parts of the herb, when wounded. Stem from 2 to 5 feet high, much branched, somewhat forked, leafy, round, furrowed, hollow. Leaves of a dark shining green, doubly pinnate, with generally opposite, stalked, wedge-shaped, variously and deeply cut leaflets; those of the lowermost leaves rather the broadest; all veiny and smooth. Umbels large, terminal, stalked, convex, of many general rays, and still more copious partial ones. General as well as partial bracts various in number and shape, either linear and undivided, or dilated and partially leafy or almost obliterated. Flowers white, or tinged with purple, very numerous and crowded, slightly radiant; the outer stalked and barren, the central sessile and fertile. Fruit very pale brown, 2 lines long, nearly cylindrical; calyx teeth very small, persistent, incurved; styles brownish purple, straight, permanent, about half the length of the fruit, or rather shorter; ridges convex, the dorsal ones very narrow, the lateral ones very broad. — A dangerously poisonous plant, the cause of many fatal accidents. Dr. Christison considers it the most energetic of the narcotico-acrid apiaceæ. It is difficult to conceive how it should be mistaken for hemlock by herb gatherers, as Godefroi asserts. The roots are usually the part eaten by those who fall victims to it,

mistaking it for parsnips, ground nuts, or similar roots. It has been used in lepra and ichthyosis; and Dr. Hope found an infusion of the leaves useful in promoting the menstrual discharge.

86. Œ. Phellandrium *Spreng. prodr.* 37. *DC. prodr.* iv. 138. *Eng. Bot.* t. 684. *Nees and Eberm. pl. med.* t. 287. *handb.* iii. 22. *S. and C.* i. t. 40. *Smith Eng. fl.* ii. 72. — Phellandrium aquaticum *Linn. sp.* 366. — Ditches and wet places all over Europe, the Crimea, and Siberia. (Water Dropwort.)

Root spindle-shaped, thick, with many whorled fibres. Stem 2 or 3 feet high, hollow, strict, furrowed, half immersed in the water, very bushy, with numerous spreading, leafy branches. Leaves stalked, spreading, repeatedly pinnate, cut, with innumerable fine, expanded, dark-green, shining, acute segments. Umbels opposite to the leaves, on shortish stalks, about 5-rayed, without any general bracts. Partial umbels very dense, of numerous short rays, accompanied by many narrow, taper-pointed bracts. Flowers white, numerous, all fertile, the outer ones largest and most irregular; the innermost more certainly prolific. Styles long, filiform, spreading, capitate. Fruit ovate, rather compressed, purplish, smooth, oblong, crowned with the minute spreading calyx, and rather short, permanent, slightly spreading styles; the dorsal ridges distinct, but little elevated, the lateral ones much broader and thicker; all confluent below the calyx. Pedicels shorter than the fruit.—Poisonous like the last, but in a less degree.

N. B. This genus contains 20 species according to De Candolle; and Fée reckons them all dangerous poisons, nothwithstanding that the fleshy tubercles of Œ. pimpinelloides, and peucedanifolia have occasionally been eaten.

ÆTHUSA.

Calyx obsolete. Petals obovate, emarginate, with an inflexed lobe, the outer somewhat radiating. Fruit ovate globose. Half-fruits with 5 elevated thick acutely keeled ridges, the laterals forming an edge, and rather broader than the others, surrounded by a somewhat winged keel. Channels with single vittæ; commissure with two curved ones. — Annuals. Leaves multifid. Involucre none, or 1-leaved; involucels with 1 to 3 leaflets, all on one side, and pendulous. Flowers white.

87. Æ. Cynapium *Linn. sp.* 367. *DC. prodr.* iv. 141. *Eng. Bot.* t. 1192. *S. and C.* i. t. 8. *Smith Eng. fl.* ii. 64. — Cultivated ground, common throughout Europe. (Fools' Parsley.)

Root tapering, whitish. Herb erect, of a dark lurid green, fetid. Stem round, striated, leafy, often purplish, a foot high. Leaves with short sheathing footstalks, all ternate, with slender-stalked, tripartite, cut, somewhat cuneate leaflets. Umbels stalked, terminal, spreading and flattish, distinguishable at first sight by their 3, long, narrrow, pendulous, 1-sided partial bracts, and the want of general ones. Flowers pure white, rarely partially abortive. Fruit pale brown, ovate, 2 lines long, without any remains of a calyx; ridges thick, corky, sharp, with

no channels visible between them, the dorsal ones the narrowest. Vittæ of the commissure 2, blood red, curved, more distant at the base than at the apex. — The leaves are poisonous, producing nausea, vomiting, headach, giddiness, drowsiness, spasmodic pain, numbness, &c. The leaves are dark in colour and nauseous in smell, which ought to prevent its being mistaken for common parsley.

FŒNICULUM.

Calyx a tumid obsolete rim. Petals roundish, entire, involute, with a squarish blunt lobe. Fruit nearly taper. Half-fruits with 5 prominent bluntly keeled ridges, of which the lateral are on the edge, and rather the broadest. Vittæ single in the channels, 2 on the commissure. — Biennials or perennials. Leaves pinnated, decompound, with setaceous segments. Involucre none. Flowers yellow.

88. F. vulgare *Gærtn. carp.* i. 105. *DC. prodr.* iv. 142. *Nees and Eberm. pl. med.* t. 277. *handb.* iii. 34. *Smith Eng. fl.* ii. 85. — Meum Fœniculum *Spreng. prodr.* 32. Anethum Fœniculum *Linn. sp.* 377. — Common on sandy and chalky ground all over Europe. (Common Fennel.)

Root tap-shaped. Herb smooth, of a deep glaucous green. Stem 3 or 4 feet high, erect, copiously branched, solid, round, striated, smooth, leafy. Leaves triply pinnate; leaflets thread-like, acute, long, more or less drooping; footstalks with a broad, firm, sheathing base. Umbels terminal, very broad, flat, of very numerous, smooth, angular, rather stout rays; the partial rays much more slender, short, very unequal. Bracts entirely wanting. Calyx none. Petals obovate, with a broad, obtuse, inflexed point, altogether of a golden yellow, as well as the stamens. Styles very short, with a large, ovate pale yellow base. Fruit ovate, not quite 2 lines long, pale bright brown, smooth; ridges sharp, with but little space between each, the lateral ones rather the broadest; terminated by a permanent conical disk. — Oil of wild fennel, is obtained from the fruit.

89. F. dulce *C. Bauh. pin.* 147. *DC. prodr.* iv. 142. *Pereira in med. gaz.* xix. 685. — Italy, Portugal, &c. (Sweet fennel.)

This is extremely like the last; only it is a very much smaller plant, and the umbels consist, as De Candolle has truly remarked, of only 6–8 rays, not of 13–20, as in common fennel. There is also a considerable difference in the fruit as will appear by comparing the following description with that given under the last species. Fruit narrow, oblong, 3 lines long, pale dull brown, smooth; ridges sharpish, with a space between each for a convex line indicating the vittæ, the lateral ones rather the broadest; not a trace of calyx. Italian writers usually consider it a cultivated variety of common fennel. — Oil of sweet fennel is obtained from the fruit; its nature is similar to that from other apiaceæ.

90. F. Panmorium *DC. prodr.* iv. 142. — Anethum Panmori *Roxb. Fl. Ind.* ii. 95. — Various parts of India.

Root white, nearly fusiform, and almost simple. Stem erect, branched from the base to the top, from 2 to 4 feet high; the branches erect, round and smooth, with a uniform, pale, glaucous tinge, and not striated. Leaves supra-decompound, divisions tapering, smooth and filiform, but by no means so numerous as in Fœniculum vulgare. Umbels terminal, rather concave, but not regular; the convex partial umbels, of which there are generally from 10 to 20, standing on peduncles of very unequal lengths. Flowers small, bright, deep yellow. Petals long, ovate, with their points rolled in. Stamens longer than the petals. Styles scarcely any. Fruit exactly as in Fœniculum vulgare and with the same taste. — Used medicinally in India as a warm aromatic and carminative, in flatulent colic and dyspepsia.

ATHAMANTA.

Calyx 5-toothed. Petals obovate, emarginate or entire, with a very short inflexed unguiculate segment. Fruit tapering to the neck, taper or a little compressed from the side. Half-fruits with 5 filiform wingless equal ridges, the lateral of which are on the edge. Channels each with 2–3 vittæ. — Perennials or biennials, often villous on the stems and fruit. Leaves triternate or pinnated; segments cut or multifid. Involucre 1-or few-leaved; involucels many-leaved. Flowers white.

91. A. cretensis *Linn. sp. pl.* 352. *DC. prodr.* iv. 155. *Jacq. fl. austr.* t. 52. *Fée hist. nat.* ii. 203. — In open, rough, woody, mountainous spots in the middle and south of Europe.

Stem rather villous. Leaves pinnated; the segments trifid in linear lobes; the lowest hardly higher than the others. Involucre 1-or few-leaved. Petals hairy at back. — The fruits are aromatic with a warm agreeable flavour, and a smell like that of marjoram. They were used in the preparation of Diaphœnix, Venice treacle, and compound syrup of wormwood. (Semina Dauci cretici *Officin.*)

MEUM.

Calyx obsolete. Petals entire, elliptical, acute at the base and apex. Fruit nearly taper. Half-fruits with 5 prominent sharply keeled equal ridges, of which the laterals are marginal. Vittæ several in each channel, from 6–8 on the commissure. — Smooth perennials. Stem nearly simple, striated. Leaves supra-decompound or pinnated; segments multifid; lobes linear acute thin. Involucre hardly any; involucels many-leaved. Flowers white or purple.

92. M. athamanticum *Jacq. fl. austr.* t. 303. *Eng. Bot.* t. 2249. *DC. prodr.* iv. 162. — Athamanta Meum *Linn. sp.*

plant. 355. *Fée cours.* ii. 203. Æthusa Meum *L.* Ligusticum capillaceum *Lam.* Ligusticum Meum *Crantz.* Μέον ἀθαμαντικὸν, *Dioscorid.* — Mountainous pastures all over Europe.

Leaves supra-decompound with capillary segments. Stem somewhat branched and leafy. Involucre with hardly more than 1 bract; involucels scarcely extending more than half way round the umbel. — The roots are fusiform, and about as thick as the finger, with numerous transverse close wrinkles. They are aromatic and sweet, something like carrot, and contain a small quantity of essential oil. They form an ingredient in Venice treacle. (Radix Mei *Officin.*)

93. M. Mutellina *Gærtn. Carp.* i. t. 23. *DC. prodr.* iv. 162. — Phellandrium Mutellina *Linn. sp. plant.* 366. *Jacq. fl. austr.* t. 56. Æthusa Mutellina *Lam.* Œnanthe purpurea *Lam.* — Subalpine meadows in the middle of Europe.

Leaves twice or thrice pinnated; segments linear-lanceolate, acute. Stem nearly naked and simple. Involucre none; leaflets of involucels lanceolate. — Used like the last. (Radix Mutellinæ *Officin.*)

ANGELICA.

Calyx obsolete. Petals lanceolate, entire, acuminated, with the point straight or curved inwards. Fruit compressed at the back, with a central raphe, 2-winged on each side. Half-fruits with 3 filiform dorsal elevated ridges, the 2 laterals dilated into a membranous wing. Channels with single vittæ. — Perennials or biennials. Leaves bipinnated. Umbels terminal. Involucre none, or few-leaved; involucel many-leaved. Flowers white.

94. A. nemorosa *Tenore sylloge* 561. — Bracalà *Neapol.* — Valleys, damp woods and low watery places in the kingdom of Naples.

Stem at the upper part and peduncles downy. Leaves 3-pinnate; segments ovate short bluntish serrated decurrent at base. Involucre none. Half-fruits elliptical; the wings as broad as the dorsal crested ridges. Smell of the fruit hircine; root acrid. — The root is reckoned by the Neapolitans one of their best remedies against the itch.

ARCHANGELICA.

Calyx with 5 short teeth. Half-fruits with thick keeled ridges. Seed not adhering to the integument, covered all over with numerous vittæ. Otherwise the same as Angelica.

95. A officinalis *Koch. umb.* 98. f. 17. 19. *DC. prodr.* iv. 169. *Nees and Eberm. pl. med.* 279. 280. *handb.* iii. 60. *S. and C.* ii. t. 83. *Smith Eng. fl.* ii. 80. — Angelica Archangelica *Linn. sp.* 360. *Eng. Bot.* t. 2561. — Watery places in the northern parts of Europe.

Root large, fleshy, branched, resinous, pungently aromatic. Stem erect, 4 or 5 feet high, and from 1 to 2 inches in diameter, leafy, branched in the upper part, striated, polished, a little glaucous. The

foliage, stalks, and even the flowers, are all of a bright green. Leaves 2 or 3 feet wide, biternate, or somewhat bipinnate, very smooth; leaflets ovate-lanceolate, acute, cut, sharply and closely serrated, partly decurrent, the odd one deeply 3-lobed. Footstalks at the base excessively dilated and tumid, pale and rather membranous, with many ribs. Umbels, both general and partial, nearly globose, the rays of both very numerous, spreading, nearly smooth. General bracts few, linear, deciduous, often wanting; partial about 8, linear-lanceolate, short; occasionally enlarged, leafy and notched. Fruit 3½ lines long, pale clay colour, oblong, with the ridges sharp, thin, elevated, and rather hard, the dorsal ones approximated and forming rounded channels between them. — Root fragrant, bitterish, pungent, sweet when first tasted, but leaving a glowing heat in the mouth. "The Laplanders extol it not only as food but medicine. In coughs, hoarseness, and other pectoral disorders they eat the stalks roasted in hot ashes; they also boil the tender flowers in milk till it attains the consistence of an extract which they use to promote perspiration in catarrhal fevers and to strengthen the stomach and bowels in diarrhœa. The leaves seeds and roots are certainly good aromatic tonics. *S. and C.*

OPOPONAX.

Calyx obsolete. Petals roundish entire rolled inwards, with a rather acute lobe. Disk broad and thick. Styles very short. Fruit flattened at the back, with a dilated convex border. Half-fruits with 3 very fine dorsal ridges, and no distinct lateral ones. Vittæ 3 to each channel, 6–10 to the commissure. — A perennial, with a thick root, and a rough stem. Leaves bipinnate; segments unequally cordate, crenated, obtuse. Umbels compound. Involucre both universal and partial, few-leaved. Flowers yellow.

96. O. chironum *Koch umb.* 96. *D C. prodr.* iv. 170. *N. and E. handb.* iii. 56. — Pastinaca Opoponax *Linn. sp.* 376. *Waldst. and Kit.* iii. t. 211. *Fl. Gr.* t. 288. *Woodv.* t. 113. *S. and C.* ii. t. 98. Ferula Opoponax *Röm. and Sch. syst.* vi. 597. Πάνακες ἡρακλέιον, *Dioscorid.* — Dry hills, margins of fields, thickets upon the coast in the south of Europe and Asia Minor.

A plant 6 or 7 feet high, resembling a parsnip, of a dull yellowish green colour. Stem strongly furrowed. Leaves from 1 to 2 feet long and more, flat, regularly bipinnate, with ovate-cordate leaflets, which are usually oblique at the base, often confluent, and surrounded with a cartilaginous crenated border; the petioles hispid. Umbels proliferous, of a small number of long slender rays, and with several firm ovate-oblong, undivided bracts; partial umbels spreading, with no involucre or only the rudiments of one. Flowers yellow. Calyx inconspicuous. Styles rather short and stout. Fruit 4 lines long, oblong, flat, with a pale thickened border; dorsal ridges filiform, but little raised, much paler than the dull brown broad flat distinctly vittated channels; commissure dull brown, with a closed elevated filiform raphe. — A milky juice exudes from the root when wounded, and hardens into opoponax, a fetid gum resin similar in its effects to assafœtida.

FERULA.

Calyx a short 5-toothed border. Petals ovate, entire, acuminate, with an ascending or incurved point. Fruit flattened at the back, with a dilated flat border. Half-fruits with 3 dorsal filiform ridges, the two lateral obsolete and lost in the dilated margin. Vittæ in the dorsal channels 3 or more, 4 or many more on the commissure. — Root fleshy. Stem tall. Leaves supra-decompound; generally cut up into linear segments. Involucres variable. Flowers yellow.

97. F. Asafœtida *Linn. mat. med.* 79. *De Cand. prodr.* iv. 173. — Asa fœtida Disgunensis *Kœmpf. Amœn. exot.* 535. t. 536. copied in *Nees and Eberm. pl. med.* t. 293. — Persia; hills and plains near Herat, mountains of Laristan, Beloochistan.*

Root perennial, fleshy, with a coarse hairy summit; either simple like a parsnip, or with one or more forks. Leaves radical, springing up in the autumn, growing vigorously through the winter, and withering in the end of spring; 1½ foot long, shining, coriaceous, like those of Lovage, glaucous-green, pinnated, with pinnatifid segments whose lobes are oblong and obtuse; petiole terete, channelled only at the base. Stem 6–10 feet high, solid, clothed with membranous sheaths. General umbels with from 10 to 20 rays; partial ones 5–6-flowered. Fruit flat, thin, reddish brown, like that of parsnip, only rather larger and darker, slightly hairy or rough (quadamtenùs pilosum sive asperum) *Kœmpfer*. Fruit obovate, 6 lines long, rather convex, but little thinned away at the edge; the dorsal ridges slightly elevated, the lateral undistinguishable; vittæ of the back about 20 or 22, interrupted, anastomosing and turgid with asafœtida: of the commissure 10. The irregularly elevated appearance of the vittæ of the back of the fruit gives it an uneven aspect, which I presume is what Kœmpfer means by asperum. — A fetid alliaceous gum resin is obtained by slicing the fleshy perennial roots; it is acrid, bitter, and antispasmodic.

This is the most genuine Asafœtida plant, which is hardly known to modern Botanists. Probably the substance is yielded by other species of Ferula. Professor Royle says, he obtained two different fruits from the Bazaars of India; see also Ferula persica and F. Hooshee. It has also been conjectured to have produced the Silphium or Laser of the ancients, but I think on unsatisfactory evidence. See Thapsia.

98. F. persica *Willd. sp. pl.* i. 1413. *Bot. Mag.* t. 2096. *De Cand. prodr.* iv. 173. *Nees and Eberm.* iii. 55. *S. and C.* iii. t. 169. — Asafœtida *Hope in phil. trans.* 1785. 36. t. 3 and 4. Ferula sagapenum *Fée cours.* ii. 201. — Persia.

Root perennial. Radical leaves procumbent, ternate, supra-decompound; segments decurrently pinnated with linear-lanceolate lobes, which are dilated cut and ciliated at the end. Stem about 2 feet high,

* Lieutenant Burnes speaks of it as growing on the mountains of Hindoo Kush, at an elevation of 7000 feet. He states that it rises to the height of 8 or 10 feet; its milk is at first white, then turns yellow and hardens, in which state it is put into hair bags and exported; sheep browse upon the tender shoots, which are believed to be highly nutritious.—(*Travels*, ii. 243.) But as he calls his plant an annual, it cannot be this species.

erect, taper, smooth, with concave membranous sheaths. Lower branches alternate, middle ones verticillate. Rays of the general umbel 20–30, of the partial 10–20. Involucres 0. Flowers in the sessile umbel fertile, in the stalked ones sterile. *Hope and Sprengel.*— This plant is said by Willdenow, Sprengel, and Fée, to produce Sagapenum, but without sufficient evidence. Michaux sent its fruit from Persia as of Asafœtida. Nees and Ebermaier regard it as one of the plants yielding the latter substance, and probably with justice.

99. F. orientalis *Linn. sp. pl.* 356. *Tournef. voyage* ii. 154. *De Cand. prodr.* iv. 173. — Fashook *Jackson Morocc.* t. 7. ? Ferula ammonifera *Lémery dict. des dr. Fée cours.* ii. 198. Ἀμμωνιακόν (the drug) Ἀγασυλλίς, (the plant) *Discorid.*— Asia Minor, Greece; perhaps the empire of Morocco.

Root large, as thick as the arm. Stem 3 feet high, 1½ inch thick, purplish. Lower leaves very large, downy, 5 or 6 times pinnated, the principal pinnæ naked at the base; all bright green, setaceous; the upper stem-leaves smaller, with a sheathing inflated stalk of unusual size. Flowers yellow. Involucres subulate. Fruit oblong, or elliptical, brownish, bitter, oily. — What is supposed to be this plant yields in the state of Morocco a gum resin similar to Ammoniacum; whence it has been thought to be really the origin of that substance, and I think with good reason, so far as the drug of Dioscorides is concerned; for certainly there is no ground whatever for regarding Ammoniacum a corruption of Armeniacum, as Professor Don supposes; Dioscorides expressly points to the meaning of the word when he says, γεννᾶται δὲ ἐν Λιβύῃ κατὰ Ἄμμωνα. Mr. Don seems however to have produced evidence of the Ammoniacum of the shops being obtained from a Persian plant. See Dorema.

100. F. hooshee — Beloochistan.

Fruit obovate, 9 lines long, with the dorsal ridges distinctly elevated, the lateral more depressed, but evident and within the margin. Vittæ of each channel 3, of the commissure 8–10. — "Resembles the F. asafœtida in size and appearance, and has a gum, but it is not collected; it is called Hooshee, and resembles the Opoponax of the European shops." *Mrs. Macneill's letter March* 1833. Apparently very near F. Szovitziana, but its seed is smaller in proportion to the fruit, and it has a distinct smell of asafœtida, which the former has not. This is what is referred to in Professor Royle's Illustrations p. 231. as resembling Opoponax; not however in the structure of the fruit, but in the quality of the produce.

101. F. ferulago *Linn. sp. pl.* 356. *DC. prodr.* iv. 171. — F. nodiflora *Jacq. austr. app.* t. 5. F. galbanifera *Lob. Nees and Eberm.* iii. 49. — Coasts of the Mediterranean, Transylvania, Galicia, the Caucasus.

Stem terete, striated. Leaves supra-decompound with pinnatifid divaricating segments, and linear cuspidate lobes. Leaflets of involucre numerous, oblong-lanceolate, reflexed. Rays of general umbel about 12, of the partial umbels rather more. Fruit 6 lines long, obovate; the three dorsal ridges thick and elevated, the lateral ones less distinct, the margin somewhat thickened. Vittæ indefinite in number on both sides the fruit, very slender. — Yields abundantly a gum-resinous

secretion, and was thought to produce Galbanum; see Galbanum officinale.

102. F. tingitana *Linn. sp. plant.* 355. *DC. prodr.* iv. 173. *Rivin. pentapet.* iii. t. 10. — Fields in Barbary in the province of Tangiers; it is also said in the country of Cyrene, but this is denied by Viviani. (*Fl. Libyc.* 17.)

Stem taper, branched. Leaves supra-decompound shining; segments oblong-lanceolate, cut, toothed; the upper petioles large and sheathing. Umbel terminal on a short stalk; the lateral flowers few, male, on longer stalks. Involucre 0. — Sprengel considers this the Silphion of the ancients, from which the Laser cyreniacum or Asa dulcis was procured; but Viviani asserts that Ferula tingitana does not grow in the country of Cyrene, but only occurs more to the westward. See Thapsia.

DOREMA.

Epigynous disk cup-shaped. Fruit slightly compressed from the back, edged; with 3 distinct filiform primary ridges near the middle, and alternating with them 4 obtuse secondary ridges; the whole enveloped in wool. Vittæ 1 to each secondary ridge, 1 to each primary marginal ridge, and 4 to the commissure of which 2 are very small.

103. D. ammoniacum *D. Don. in Linn. trans.* xvi. 601. — ? Peucedanum ammoniacum *Nees and Eberm.* iii 42. — Oshac, or Ooshāk *Pers.* — Persia: plains of Yerdekaust and Kumisha, in the province of Irāk; and near the town of Jezud Khāst, in very dry plains and gravelly soil, exposed to an ardent sun.

A glaucous green plant looking like Opoponax. Root perennial. Leaves large, 2 feet long, somewhat 2-pinnate; pinnæ in 3 pairs; leaflets inciso-pinnatifid, with oblong mucronulate entire or slightly lobed segments, from 1–5 inches long and ½ to 2 inches broad; petiole downy, very large and sheathing at the base. Umbels proliferous, racemose; partial umbels globose, on short stalks, often arranged in a spiked manner. Involucre general and partial 0. Flowers sessile, immersed in wool. Teeth of calyx acute, membranous, minute. Petals ovate, reflexed at the point. Disk large, fleshy, cup-shaped. Fruit elliptical, compressed, buried in wool, surrounded by a broad flat edge; dorsal primary ridges distinct, filiform; lateral confluent with the margin; secondary ridges slightly elevated, rounded. Vittæ 1 beneath each secondary ridge; 1 beneath each of the broad marginal primary ridges; 2 on each side of the suture of the commissure, the external ones being very minute. Seed . . . . ? This description is principally taken from Mr. Don's account; what regards the fruit has however been drawn up from an examination of a couple of mericarps, for which I am indebted to that gentleman. — The stem and fruits yield a great abundance of the fetid gum resin Ammoniacum; its action is similar to that of Asafœtida. It is chiefly employed as a discutient and expectorant.

PEUCEDANUM.

Calyx a 5-toothed margin. Petals obovate, contracted into an inflexed segment, emarginate or nearly entire. Fruit flattened at the back, surrounded by a dilated flat border. Half-fruits with equi-distant ridges; the 3 dorsal filiform, the lateral more obsolete, next the dilated border, or lost in it. Vittæ single in the channels, or in the lateral ones 1½ to 2; usually 2 on the commissure. — Perennials generally smooth. Leaves pinnated, more or less compound. Umbels compound, terminal. Involucre variable; involucels many-leaved. Flowers white, yellow, or yellowish-green.

104. P. officinale *Linn. sp.* 353. *DC. prodr.* iv. 177. *Eng. Bot.* t. 1767. *N. and E. handb.* iii. 39. — Meadows and shady places throughout Europe. (Sulphur wort, Hog's fennel.)

Herb smooth, 3 or 4 feet high, with a resinous juice, and a strong sulphureous smell. Leaves 4 or even 5 times ternate with linear-lanceolate acuminate flaccid segments. Umbels sometimes slightly proliferous; the general with about 20 rays and an involucre of 3 deciduous setaceous bracts; the partial extremely unequal, many of the flowers abortive, and an involucre of many permanent setaceous bracts. Fruit 2¾ lines long, oblong, emarginate at each end, pale light brown, the vittæ deep chocolate colour, the primary ridges much depressed and paler, the lateral resembling deep furrows between them and the dilated margin. Commissure light fawn colour, with two crimson vittæ very conspicuous upon it. — Juice of the root inspissated in the sun, or before a fire, is reputed antispasmodic and diuretic.

105. P. Oreoselinum *Mönch. meth.* 82. *DC. prodr.* iv. 180. *Nees and Eberm. pl. med.* t. 291. *handb.* iii. 41. — Athamanta Oreoselinum *Linn. sp. pl.* 352. *Jacq. fl. austr.* 68. — Open hills of the middle of Europe and the Caucasus.

Stem taper striated. Leaves tripinnate with the petioles broken back; segments remote, ovate, cut, pinnatifid, divaricating, shining, nearly pointless. Fruit roundish-oval. — The leaves and stem (Herba Oreoselini *Officin.*) are bitter and aromatic, as is the fruit but in a higher degree. They were used as powerful stimulants of the intestinal canal, and are still esteemed in some countries.

106. P. montanum *Koch. umb.* 94. *DC. prodr.* iv. 180. *N. and E. handb.* iii. 40. — Selinum palustre *Linn. sp.* 350. *Eng. Bot.* t. 229. *Smith Eng. fl.* ii. 98. — Marshes and boggy meadows in the north and middle of Europe.

Root tapering, simple, with many long fibres. Stem erect, 4 or 5 feet high, hollow, deeply furrowed, not hairy, branched and corymbose in the upper part, bright purple at the base. Leaves about 5 or 6 on the stem, alternate, remote, ternate with bipinnate divisions; leaflets opposite, deeply pinnatifid, dark green, smooth, their segments linear-lanceolate, never quite linear, acute, entire or trifid; petioles striated, smooth, dilated and sheathing at the base, with a reddish membranous margin. Umbels large, horizontal, of numerous, angular, general and partial rays. General bracts several, lanceolate, pointed, dependent,

not half the length of the rays, their margins membranous and partly coloured; partial ones similar, rather longer in proportion and often confluent. Flowers white, numerous, uniform, with involute petals. Fruit very light straw colour, 4 lines long, shining, obovate; the dorsal ridges very near each other, distinctly elevated, sharp, the lateral depressed and far within the broad thin margin; vittæ of the commissure subulate, straight, about half the length of the fruit. — The root abounds in a white bitter fetid juice, which hardens into a brown acrid resin. The Russians employ it as ginger. A famous remedy in Courland in epilepsy. (*Rust's krit. repert.* xii. 2. p. 281.)

IMPERATORIA.

This genus differs in nothing from Peucedanum, except in the rim of the calyx being obsolete.

107. I. Ostruthium *Linn. sp.* 371. *DC. prodr.* iv. 183. *Eng. Bot.* t. 1380. *Nees and Eberm. pl. med.* t. 290. *handb.* iii. 45. *Smith Eng. Fl.* ii. 79. — Peucedanum Ostruthium *Koch. umb.* 95. — Moist meadows and woods throughout Europe; also in Newfoundland. (Masterwort.)

Root fleshy, tuberous, somewhat creeping, of an aromatic and acrid quality. Stem 1 to 2 feet high, erect, hollow, round, striated, smooth, leafy, slightly branched. Lower leaves on long stalks, twice ternate; upper less compound, on shorter stalks, with a sheathing, membranous, sometimes jagged dilatation at the base. Leaflets 2 or 3 inches long, and broad in proportion, veiny, smooth on both sides, rough-edged, finely and sharply serrated, partly cut or lobed, the middle one, sometimes all three, deeply 3-cleft, the lateral ones oblique at the base; the uppermost leaves sometimes very narrow. Umbels broad, flattish, of about 40 smooth general rays, 8 or 10 inches wide when in fruit; the partial rays still more numerous and very slender. Flowers small, white, or pale flesh coloured, almost perfectly uniform and regular. Calyx obsolete. Styles short, reflexed, capitate. Fruit nearly orbicular, about 2 lines broad or something less, straw colour, smooth, thin, shining; the dorsal ridges elevated, stout, rather soft and undulated, the lateral ones indistinct, far within the thin pallid margin. Vittæ of the commissure deep brown, distinct. — Root acrid and bitter; it is used as a masticatory in toothach, and many writers speak well of it as a febrifuge. Lango even affirms that it has cured agues which had resisted the influence of Peruvian bark. *Burnett.*

ANETHUM.

Calyx obsolete. Petals roundish entire involute, with a squarish retuse lobe. Fruit lenticular flattened from the back, surrounded by a flattened border. Half fruits with equidistant filiform ridges: the 3 dorsal acutely keeled, the 2 lateral more obsolete, losing themselves in the border. Vittæ broad, solitary, filling the whole channels, 2 on the commissure. — Upright smooth annuals. Leaves decompound, with setaceous linear segments. Involucre none. Flowers yellow

108. A. Sowa *Roxb. Fl. Ind.* ii. 96. *DC. prodr.* iv. 186.— East Indies.

Root annual, in fact of only a few months' duration. Stem flexuose, branched, smooth, striated with deeper and lighter green, and covered with a whitish bloom, from 2 to 3 feet high. Leaves decompound, and supra-decompound, leaflets filiform, as in Fennel. Umbels terminal, convex, without involucres or involucels. Calyx scarcely any. Petals ovate-oblong, inflected. Stamens longer than the petals. Styles scarcely any. Fruit oval, compressed; half-fruits, with three ridges on the back, and surrounded by a membranous margin. — Fruit aromatic and carminative; used in the curries of the natives of India.

109. A. graveolens *Linn. sp.* 377. *DC. prodr.* iv. 186. *Nees and Eberm. handb,* iii. 38. *Fl. Dan.* t. 1572. *S. and C.* iii. t. 137. *Woodv.* t. 159. — *Ἄνηθον Dioscorid.* — Cornfields of south of Europe and the Levant; Astracan; Egypt; Cape of Good Hope; Timor. Probably migratory. (Dill.)

All the parts quite smooth and glaucous. Stem from 1 to 1½ foot high, finely striated, simply branched. Leaves tripinnated, 2–3 inches long, with fine capillary segments, broad and sheathing at the base which has a distinct even membranous margin. Umbels on long stalks, without involucre; the general of about 10 rays, the partial of rather more. Flowers yellow. Petals varnished. Fruit rather more than 2 lines long, oblong, bright shining brown and convex at the back, paler and again convex at the edge, which is separated from the back by a deep hollow; dorsal ridges sharp, filiform, elevated, very distinct but fine. Commissure dull greyish brown with the tumid vittæ only indistinctly seen. — The fruit is carminative and stimulant, and taken with food may be regarded condimentary. It is used in the colic of children and to relieve hiccough; it has also been supposed to promote the secretion of milk. "Aqua Anethi" is chiefly employed: the fruit also yields by distillation a volatile oil.

HERACLEUM.

Calyx 5-toothed. Petals obovate, emarginate with an inflected lobe; the outer often radiating and bifid. Fruit flattened at the back, surrounded by a flat broad border. Half-fruits with very fine ridges; the 3 dorsal equidistant, the 2 lateral distant from the others and contiguous to the dilated margin. Vittæ solitary in the channels, generally 2 on the commissure, all shorter than the fruit and usually clavellate. — Large coarse herbaceous plants. Leaves pinnated, 3-parted, or lobed, with large sheathing petioles. Umbels of many rays. Involucre deciduous, usually of a few leaves. Involucel of many leaves.

110. H. Sphondylium *Linn. sp. pl.* 358. *Eng. Bot.* t. 939. *DC. prodr.* iv. 192. — By roadsides and in hedges and dry ditches all over Europe; also in Siberia and Unalaschka. (Brankursine.)

Leaves pinnated or pinnatifid, scabrous; leaflets with 3–5-lobed segments whose divisions are incised and crenate. Bracts of the involucels linear, setaceous. Fruit, even when young, smooth and nearly orbicular.

—Rind and root acrid, and will ulcerate the skin on which they are applied. Inside of the stem eaten by the Kamtschadales: root contains sugar.

H. gummiferum, *Willd. enum.* 312, supposed to be the same as H. pubescens *M. B.*; has been erroneously supposed to furnish opoponax. (See Opoponax, p. 44.)

GALBANUM.

111. G. officinale *Don. in. Linn. trans.* xvi. 603. — Barzud *Arab;* Bireeja *Hindust.* the drug; Kinneh and Nafeel the plant; according to professor Royle. Χαλβάνη *Dioscorid.* — Syria, according to Dioscorides. The drug comes from Smyrna and India.

Fruit compressed at the bark, elliptical; ridges 7, elevated, compressed, bluntly keeled, not winged; the lateral distinct, next the margin. Channels broadish, concave, without vittæ; commissure flat, dilated, with 2 broad curved vittæ. *Don.* — The gum resin Galbanum is less powerful than asafœtida, but its action is of the same kind, and their uses the same.

Nothing is known of this plant except from the brief account of Professor Don; it requires to be much more investigated. Did the fruit, found by Mr. Don upon the gum really belong to it? It would appear that the opinion of this drug being furnished by Bubon Galbanum *L.* or Ferula Ferulago is unfounded.

CUMINUM.

Calyx-teeth 5, lanceolate, setaceous, unequal, permanent. Petals oblong, emarginate, erect spreading, with an inflexed lobe. Fruit contracted at the side. Ridges of half-fruits wingless, the primary filiform minutely muricated, the laterals forming a border; the secondary more prominent and aculeated. Channels under the secondary ridges with 1 vitta in each. — Annuals with multifid leaves having setaceous divisions. Involucrum with 2–4 simple or divided leaflets; involucel halved, 2–4-leaved, becoming reflexed. Flowers white, or pink.

112. C. Cyminum *Linn. sp.* 365. *DC. prodr.* iv. 201. *Nees and Eberm. pl. med.* t. 288. *handb.* iii. 12. — Κυμίνον ἡμέρον *Dioscorid.* — Upper Egypt, Ethiopia. (Cumin.)

Stem erect, slender, branched, about a foot high. Leaves multifid, with long filiform segments. Umbels both partial and general of about 5 rays, with the involucres consisting of 2 or 3 filiform 1-sided bracts. Flowers small, white, overtopped by the bracts, which after flowering are reflexed. Fruit 2 lines long, much longer than the pedicels, nearly taper, but little contracted at the sides, fusiform, crowned by the short teeth of the calyx, densely covered with short rough hair upon the channels, less densely upon the ridges, which are paler, filiform, and a little raised. — Fruits carminative as in other plants of the order, but the smell disagreeable. Chiefly used in veterinary surgery. Combined with resin they make a warm stimulating plaister.

THAPSIA.

Calyx a 5-toothed edge. Petals elliptical, entire, acuminate, with the point turned or rolled inwards. Fruit compressed from the back. Half-fruits with 5 primary filiform ridges of which the 3 middle ones are at the back, the 2 lateral on the plane of the commissure; and 4 secondary the dorsal being filiform, the lateral membranous winged entire. Channels beneath the secondary ridges each with 1 vitta.—Perennials. Leaves 1–2–3-pinnated, or decompound; the petiole sheathing; the upper leaves often reduced to nothing but a petiole. Umbels ample, compound, many-rayed. Involucres either present or absent deciduous. Flowers yellow.

113. T. villosa *Linn. sp. pl.* 375. *DC. prodr.* iv. 202. *Lam. illustr.* t. 206. — On hills and in thickets in Portugal, Spain, South of France, Barbary and Cyprus.

Stem taper, smooth. Leaves tripinnated villous, as are the petioles; segments oblong, sinuated, pinnatifid, the lower deflexed. Involucres scarcely any. — The roots are acrid and corrosive; they were reputed purgative in a high degree, but recent experiments seem to contradict this assertion. *Fée.*

114. T. Silphion *Viviani fl. Libyc.* p. 17. — T. garganica var ? *DC. prodr.* iv. 202. — On the mountains of Cyrene.

Root thick, fusiform. Stem erect, taper, furrowed, smooth. Cauline leaves with a large dilated amplexicaul petiole, pinnated; leaflets numerous, verticillate, sessile, 5-parted; some of the segments simple, others trifid and pinnatifid; both leaflets and segments linear, long, revolute at the edge, hairy on both sides. Umbels on the extremity of the stem and branches, large, convex, many-rayed. Involucres and involucels none when the plant is in fruit; partial umbels many-flowered. Peduncles slender, smooth. Fruit very large, about 10 lines long, and 6 broad. Half-fruit linear, elliptical, rather thinner near the base, with 3–4 thick elevated ridges and a broad membranous satiny margin. *Viviani.* — The Laser cyrenaicum or Asa dulcis of Cyrene, was a drug in high reputation among the ancients for its medical uses; it had miraculous powers assigned to it; to neutralise the effects of poison, to cure envenomed wounds, to restore sight to the blind, and youth to the aged, were only a part of its reputed properties; it was also reckoned antispasmodic, deobstruent, diuretic, &c. &c. So great was its reputation, that the princes of Cyrene caused it to be struck on the reverse of their coins; and the Cyrenean doctors were reckoned among the most eminent in the world. Its value was estimated by its weight in gold. Although such extravagant powers were absurdly ascribed to the plant, there can be no doubt that it possessed some very active principles, and accordingly it has always been a point of much interest to determine what the plant was. It has been successively referred to Opoponax, to Ferula tingitana, to Laserpitium Siler and gummiferum, and to Thapsia Asclepium. But the discovery of this species on the mountains

of Cyrene by Della Cella*, seems to set the question at rest. It is the only umbelliferous plant inhabiting those regions, which will at all answer to the figures struck on the Cyrenean coins (see frontispiece of *Viviani's Fl. Libyc.*, and *Penny Cyclopædia*, vol. viii. p. 265.), and this agrees as well with such rude representations as can be expected from any plant. While, however, it may be considered certain that the Silphion of Cyrene was yielded by Thapsia Silphion, it by no means follows that all the Silphion came from that species. On the contrary Pliny (*Hist. Nat.* lib. xxii. c. 23.) expressly states that in his time it was chiefly imported from Syria, the worst sort being the Parthian, the Median of better quality, and that of Cyrene altogether lost.

LASERPITIUM.

Calyx a 5-toothed rim. Petals obovate, emarginate, with an inflected lobe. Fruit compressed from the back or somewhat taper, 8-winged; namely the half-fruits with 5 primary filiform ridges, and 4 winged secondary ones. A vitta in the channel below each secondary ridge. — Herbaceous plants. Leaves 2–3-pinnate; segments entire, or toothed, or cut. Umbels many-rayed, showy. Involucres many-leaved. Flowers white, rarely yellow. — The 8 wings of the fruit distinctly mark this genus.

115. L. glabrum *Crantz austr.* iii. 54. *DC. prodr.* iv. 204. — L. latifolium *Jacq. fl. austr.* t. 146. *Fée cours.* ii. 209. — On the mountains of the continent of Europe in dry and stony places.

Leaves bipinnate, quite smooth and shining; the segments obliquely cordate, here and there mucronate and toothed; those of the upper leaves entire. Bracts of the involucre setaceous. Wings of the fruit nearly equal and rather crisp. Linnæus having applied the name of L. latifolium both to this and L. asperum the former name has been suppressed by De Candolle. — The root is gorged with a gum resinous juice, which is acrid, bitter and even somewhat caustic. It is reckoned a violent purgative. The French call it Turbith des montagnes and Faux Turbith. *Fée.*

DAUCUS.

Calyx a 5-toothed edge. Petals obovate emarginate, with an inflexed point, the outer generally radiating and deeply bifid. Fruit somewhat compressed from the back, ovate or oblong. Half-fruits with the 5 primary ridges filiform and bristly, the 3 middle ones at the back, the lateral on the plane of the commissure; the 4 secondary equal, more prominent, winged, split into a single row of spines. Vittæ solitary in the channels below the secondary ridges. — Usually biennials. Leaves bipinnate. Bracts of involucrum multifid leafy; of involucel nume-

* *See* Viaggio da Tripoli di Barberia alle frontiere occidentali dell'Egitto, dall Dott. P. Della Cella, Genova 1819.

rous entire or trifid. Flowers white or yellow, the central one generally fleshy, dark purple, and sterile.

116. D. gummifer *Lam. dict.* i. 634. *Gussone prodr.* i. 321. *fl. sicula* t. 117. *Nees and Eberm. handb.* iii. 12. — Pastinaca tenuifolia gummi manans *Boccon. mus.* t. 20. — Dry stony hills on the sea coast of Sicily.

Hirsute. Leaves somewhat 3-pinnate rather shining; leaflets ovate, cut, acute. Bracts of both involucres broadish, with a membranous margin, much shorter than the umbels. Prickles of the fruit hooked. — The roots yield the Bdellium siculum of the old Pharmacopœias, according to Boccone. It has a bitter balsamic taste and a weak but unpleasant odour.

N.B. De Candolle considers the plant thus called by Lamarck the same as our British Daucus maritimus, and he reduces it as a synonym to the D. hispanicus of Gouan. He then refers Boccone's Bdellium carrot to D. Gingidium, the character of which here follows; but Gussone, the greatest of all authorities concerning Sicilian plants, retains D. gummifer as a distinct species.

117. D. Gingidium *Linn. sp. plant.* 348. *DC. prodr.* iv. 211. — Rocky shores of Corsica.

Stem and petioles rough with scattered bristles. Leaves bipinnate; segments cut, toothed, ovate; lobes obtuse mucronate. Bracts of involucre striated, pinnatifid, about as long as the umbel. Fruit ovate; prickles as long as broad, setiform, capitate with inflexed hooks. — See last species.

118. D. Carota *Linn. sp. pl.* 348. *Eng. Bot.* t. 1174. *Nees and Eberm. med. pl.* t. 287. *handb.* iii. 10. *DC. prodr.* iv. 211. *S. and C.* i. t. 56. *Woodv.* t. 161. — Common in high sandy soil all through Europe, the Crimea, the Caucasus, China, and Cochin-China; also in America and elsewhere probably carried. (Common carrot.)

Root slender, yellowish, aromatic and sweetish, resembling the Garden Carrot, which is only a cultivated variety. Stem 2 or 3 feet high, branched, erect, leafy, hairy or bristly. Leaves alternate, on broad, concave, ribbed footstalks, bipinnate, cut, narrow, acute, distantly hairy. Umbels terminating the long leafless branches, solitary, large, white, except the one central neutral flower, which is blood-red. General bracts pinnatifid, slender, large, but not so long as the umbel; partial undivided, or partly 3-cleft, membranous at the edges. Fruit small, protected by the incurvation of all the flower-stalks, by which the umbels are rendered hollow, like a bird's nest. *Smith.* Fruit 1–1½ line long, pale dull brown, oval; primary ridges filiform, bristly, 3 near the middle of the convex back, 2 on the plane of the commissure; secondary ridges deeper and irregularly split into setaceous lobes. Vittæ one under each secondary ridge, and 2 on the plane of the commissure. — A poultice for correcting the fetid discharge, allaying the pain and changing the action of ill-conditioned, phagedenic, sloughing and cancerous ulcers, is prepared from the root. Fruit carminative; but supposed to act more particularly on the urinary organs. *Pereira.*

ANTHRISCUS.

Calyx obsolete. Petals obovate, truncate or emarginate, with an inflexed lobe which is generally very short. Fruit contracted at the side, beaked: the beak shorter than the seed. Half-fruits nearly taper, without ridges except on the beak which has 5. — Perennials, biennials, or annuals. Stems taper, striated or furrowed. Leaves decompound; segments generally linear and fine. Umbels opposite the leaves or terminal. Involucre none; involucels many-leaved. Flowers white.

119. A. sylvestris *Hoffm. umbellif.* t. i. f. 19. *DC. prodr.* iv. 223. *Nees and Eberm. med. pl. suppl. handb.* iii. 30. — Chærophyllum sylvestre *Linn. sp. plant.* 369. *Eng. Bot.* t. 762 — A common weed all over Europe as far as the Caucasus.

Stem furrowed, smooth, branched. Leaves 3-cut decompound; segments ovate pinnatifid; lobes oblong rather obtuse, the end ones longest. Umbels terminal; rays smooth. Styles very short, scarcely diverging. Fruit oblong smooth. — Recommended by Osbeck, in 1811, in the form of extract in siphilitic cases. Reputed to be similar in its effects to Hemlock only rather less narcotic. (Herba Cicutariæ *Officin.*)

120. A. vulgaris *Pers. synops.* i. 320. *DC. prodr.* iv. 224. — Scandix Anthriscus *Linn. sp. pl.* 368. *Eng. Bot.* t. 818. — A common annual weed, as far as the Crimea. (Rough Chervil.)

Stem naked, smooth. Leaves 3-parted decompound; segments pinnatifid; lobes short, obtuse; petioles hairy; sheaths ciliated. Umbels opposite the leaves. Fruit ovate, muricated, bristly, with a conical beak. — Deleterious. Some Dutch soldiers who gathered it by mistake for common Chervil were poisoned by the soup into which it was put. *Burnett.*

121. A. Cerefolium *Hoffm. umb.* t. i. f. 21. *DC. prodr.* iv. 223. *Nees and Eberm. handb.* iii. 31. — Scandix Cerefolium *Linn. sp. plant.* 368. *Eng. Bot.* t. 1268. Chærophyllum sativum *Lam.* — Cultivated grounds and waste places all over Europe. (Chervil.)

Nearly smooth. Leaves 3-parted, decompound; segments ovate pinnatifid, with rather blunt lobes. Umbels opposite the leaves, sessile. Rays from 3 to 5, downy. Fruit oblong, linear, smooth. — A common potherb, with eatable roots.

CACHRYS.

Calyx 5-toothed or more rarely obsolete. Petals ovate entire involute or inflexed at the apex. Disk depressed, scarcely visible in the ripe fruit. Fruit turgid, somewhat taper or double. Half-fruits with 5 thick ridges variable in form. Commissure nearly as broad as the half-fruit. Seed loose, covered with numerous vittæ, deeply rolled inwards. — Perennials. Leaves de-

compound. Umbels numerous. Both involucres many-leaved. Flowers yellow.

122. C. odontalgica *Pall. itin. ed. gall.* in 8vo. app. n. 309. t. 78. f. i. *DC. prodr.* iv. 236. *Fée cours.* ii. 208. — The driest deserts of Siberia, the Crimea and Caucasus.

Leaves decompound, hoary; segments linear, hoary, somewhat trifid. Stem naked. Both involucres with a few undivided bracts. Fruit oblong rather compressed from the back, scarcely furrowed. — The root excites salivation, and is said to cure pain in the teeth.

PRANGOS.

Calyx a 5-toothed rim. Petals ovate, entire, involute at the point. Disk depressed, scarcely visible in the fruit. Fruit nearly taper with a broad commissure. Mericarps compressed at the back, with 5 smooth ridges, thick at the base, ending in vertical membranous wings. Seed covered with numerous vittæ. — Perennial herbaceous plants. Stem taper. Leaves decompound, with linear segments. Umbels numerous. Flowers yellow.

123. P. pabularia *Lindl. in Journ. roy. inst.* 1825. p. 7. *DC. prodr.* iv. 239. — Fiturasulioon *Indian Bazaars* according to Professor Royle. — North of India near Draz, on the northern face of mountains.

Root woody, perennial, with numerous clustered crowns, covered over by the coarse fibrous bases of the leaves. Leaves supra-decompound, smooth, with linear entire or 3-parted segments; petioles crisp at the edge near the base. Flowers unisexual. Male umbels compound, shorter than the leaves to which they are axillary; involucres both general and partial, with membranous ovate-acuminate bracts. Calyx distinctly 5-toothed. Fruit compressed at the side, 8–9 lines long, crowned with recurved styles, and with the corky teeth of the permanent calyx. Half-fruits corky, with 5 large primary ridges, of which the dorsal are produced into a wavy wing, and coarsely tuberculated at the sides; commissure narrower than the half-fruit. Seed covered with indefinite colourless vittæ, both on the back and commissure. — Leaves dried, and eaten by cattle as winter fodder; its effects heating, producing fatness quickly, destructive of the Fasciola hepatica in sheep. *Moorcroft.*

I introduce this plant for the following reason: Professor Royle suggests that this was one of the kinds of Sylphion of the Greeks: that described by Arrian as growing only with pines on Paropamisus, where it was browsed on by numerous flocks of sheep and cattle. "Lieut. Burnes, crossing in the direction of Alexander's route, found this in the same situation, greedily cropped by sheep and even eaten by his fellow-travellers (as is also mentioned by Kinnier); and he supposes it to be the Silphium of Alexander's historians." Heeren applies the greater portion of the remarks that remain of Ctesias respecting the Indians, to the high land of Tartary, where grew the Silphium grazed on by innumerable flocks of sheep and goats. *Royle's Illustrations*, p. 230.

CONIUM.

Calyx obsolete. Petals obcordate, somewhat emarginate, with a very short inflexed lobe. Fruit compressed at the side, ovate. Half-fruits with 5 prominent equal undulated ridges of which the lateral are on the border. Channels with many striæ but no vittæ. — Biennials. Root fusiform. Stem taper branched. Leaves decompound. Both involucres 3–5-leaved, the partial one halved. Flowers white, all fertile.

124. C. maculatum *Linn. sp.* 349. *Smith Eng. Fl.* ii. 66. *DC. prodr.* iv. 242. *Eng. Bot.* t. 1191. *N. and E. pl. med.* t. 282. *handb.* iii. 27. *S. and C.* i. t. 13. *Pereira in Med. gaz.* xix. 763. — Κώνειον *Dioscorid.* — In waste places throughout Europe, the East of Asia; and the cultivated parts of America (introduced). (Hemlock.)

Root tap-shaped, whitish, fleshy. Stem from 3 to 5 feet high, erect, round, hollow, glaucous, polished, copiously spotted and dotted with dull purple. Leaves very large and repeatedly compound; leaflets ovate, closely and sharply pinnatifid, with the lower lobes incised, of a deep shining green, on long furrowed footstalks, sheathing at the base. Umbels terminal, very numerous, erect, compound; all many-rayed and smooth. General bracts ovate, cuspidate, with membranous edges. Flowers numerous, white, all fertile; the outermost very slightly irregular. Fruit 1½ line long, ovate, compressed, a pale sage-green; primary ridges elevated, sharp, wavy; commissure and channels finely wrinkled. — A powerfully narcotico-acrid plant, occasioning stupor, delirium, palsy, and asphixia; some authors state that it produces death in the most dreadful convulsions, but this is at variance with the the accounts of Dr. Christison and Mr. Pereira. It is recommended in cancerous and scrophulous disorders, syphilis, dropsy, epilepsy, as an anodyne, &c. &c. It is stated by Aretæus to be anti-aphrodisiac, by Stöerck and Bergius to be the reverse. The leaves are the parts usually employed but the preparations from them are frequently inert. This may arise in part from the manner of preparing them or from the time when they have been collected. Fothergill long since stated, what is quite conformable to theory, that Conium was to be obtained in its most active state when the flowers are just past, the fruit forming, and the plant inclining to yellow, and that the quality of that collected when the herbage is strong and succulent is very inferior. *Fothergill's Works*, 266. Mr. Pereira and Dr. Christison recommend an alcoholic tincture of the bruised ripe fruit, instead of the leaves.

SMYRNIUM.

Calyx obsolete. Petals lanceolate or elliptical, entire, acuminate, inflexed at the point. Fruit contracted at the side, didymous. Half fruits almost globose, reniform, with 3 fine prominent dorsal ridges, and 2 marginal ones almost obliterated. Channels with many vittæ. Seed involute. — Upright smooth biennials. Root fleshy. Leaves various. Umbels terminal. In-

volucres variable. Flowers yellow or yellowish green, often polygamous.

125. S. Olusatrum *Linn. sp. plant.* 376. *Eng. Bot.* t. 230. *DC. prodr.* iv. 247. — Wet places throughout Europe. (Alexander.)

Stem taper. Cauline leaves ternate, with ovate serrated segments. Involucels very short. — Formerly cultivated in lieu of Celery; the leaves have a pleasant slightly aromatic flavour. The fruit is carminative and used to be officinal.

CORIANDRUM.

Calyx-teeth 5, acute, unequal, permanent. Petals obovate emarginate with an inflexed segment, the exterior radiating and bifid. Fruit globose, with 10 ribs, scarcely separating. Half-fruits with 5 primary depressed wavy ridges and 4 secondary ones (besides the marginals) more prominent and keeled. Channels without vittæ; commissure with 2 vittæ. Seed hollowed out in front with a loose skin. — A smooth herb. Leaves multifid. Umbel with 3–5 rays. Involucre none. Involucels about 3-leaved, halved.

126. C. sativum *Linn. sp.* 367. *DC. prodr.* iv. 250. *Eng. Bot.* t. 67. *Fl. Græc.* t. 283. *Nees and Eberm. pl. med.* t. 286. *handb.* iv. 15. *Woodv.* t. 181. *S. and C.* ii. t. 94. *Smith Eng. Fl.* ii. 67. — In the corn-fields of Tartary (Szovitz), the Levant, Greece, Italy, south of Europe. Not really wild in England. (Coriander.)

Root tapering. Stem erect, 12 or 18 inches high, more or less branched, leafy, round, striated. Lower leaves pinnate, on longish slender stalks, their leaflets wedge-shaped, or fan-shaped, and acutely notched; upper leaves multifid, in fine linear segments. Umbels stalked, of 4 or 5 general rays, rarely more; the partial rays more numerous. Flowers white, often with a reddish tint. Fruit pale brown, somewhat coriaceous, spherical, 1½ line in diameter, all the ridges indistinctly shown in consequence of their slight elevation; the vittæ of the commissure short, lunate, just visible without dissection.— Fruit carminative and aromatic. Cullen considered it as more powerfully correcting the odour and taste of senna, than any other aromatic.

ARALIACEÆ.

Nat. syst. ed. 2. *p.* 25.

PANAX.

Flowers polygamous. Calyx obsolete, 5-toothed. Petals 5. Stamens 5, inserted with the petals under the edge of the disk and alternate with them. Styles 2–3, short. Fruit succulent, compressed, orbicular, 2–3-celled; cells leathery 1-seeded.

127. P. quinquefolium *Linn. sp. pl.* 1512. *Woodv. med. bot.* t. 58. *Bot. Mag.* t. 1023. *Bigelow med. bot.* ii. t. 29. *Jartoux in Phil. trans.* xxviii. 237. *DC. prodr.* iv. 252. — The north-western parts of China, in thick forests; and in similar situations in North America.

Root of 1 or more fleshy oblong and somewhat fusiform fangs, of a whitish colour, transversely wrinkled, and terminating in fibres; its upper portion slender and marked with the scars of former shoots. Stem smooth, round, green, often with a tinge of red, regularly divided at top into 3 petioles, with a flower-stalk in their centre. Petioles round, smooth, swelling at base. Leaves 3, ternate, quinate, or septenate. Leaflets pedicellate, obovate, sharply serrate, acuminate, smooth on both sides, with scattered bristles on the veins above. Umbel simple, on a round, slender peduncle, longer than the petioles. Involucre of a multitude of short subulate bracts, interspersed among the flower-stalks, which are so short as to give the appearance of a head rather than an umbel. Calyx with 5 small acute teeth. Petals 5, oval, reflexed and deciduous. Stamens 5, with oblong anthers. Styles 2, reflexed, persistent; ovary large, inferior, ovate heart-shaped, compressed. Berries kidney-shaped, retuse at both ends, compressed, of a bright scarlet colour, crowned with the calyx and styles, and containing 2 semicircular seeds. Sometimes there are 3 styles and 3 seeds. The outermost florets ripen first, and their berries often obtain their full size before the central ones are expanded. The central florets are frequently abortive. — Root an agreeable bitter sweet, with some aromatic pungency. Has a prodigious reputation among the Chinese as a stimulant and restorative under the name of "Gin-seng," but by Europeans and Americans considered nothing more than a demulcent, approaching liquorice in its qualities. This however requires further investigation, for we cannot believe that all the Chinese say, believe, and practise is fabulous or imaginary. Is the Tartarian plant the same as the North American? Under what circumstances are they each collected?

ARALIA.

Calyx very minute, entire or toothed. Petals 5, distinct and spreading at the apex. Stamens 5. Styles 5, spreading. Berry 5-celled, generally rugged. Stones papery.

128. A. nudicaulis *Linn. sp. pl.* 393. *Raf. med. bot.* i. t. 8. *DC. prodr.* iv. 257. — North America.

Stemless. Radical leaf solitary; petiole trifid; lobes pinnated with an odd one; segments 5, ovate, acute, serrated. Scape shorter than the leaf, trifid at the apex. Umbels 3, many-flowered, without involucres. — An alterative and tonic, affirmed by American writers to be as valuable a medicine as sarsaparilla.

129. A. hispida *Michx. fl. am. sept.* i. 185. is a sudorific.

130. A. spinosa *Linn. sp. pl.* 392.; a tincture of its wood used in Virginia to allay the spasms in colic.

HEDERA.

Calyx an elevated or toothed edge. Petals 5–10, not calyptrate and cohering. Stamens 5–10. Styles 5–10, converging, or consolidated. Berry 5–10-celled.

131. H. Helix *Linn. sp. pl.* 292. *Eng. Bot.* t. 1267. *DC. prodr.* iv. 261. — Common all over Europe, clinging to trees, rocks and walls. (Ivy.)

Stem climbing with root-like fibres. Leaves coriaceous, smooth, shining, 5-angled or 5-lobed, the upper or the old ones ovate and acute. Umbels simple, downy. — Leaves austere and bitter; berries bitter, aperient, emetic. It is mentioned as a sudorific, and was once reputed to prevent drunkenness and to dissipate the effects of wine.

132. H. umbellifera *DC. prodr.* iv. 262. — Aralia umbellifera *Lam. dict.* i. 225. Pseudosantalum amboinense *Rumf.* ii. t. 12. — Mountains of Amboyna.

Stem shrubby, unarmed. Leaves on long stalks, lanceolate, acuminate, distantly serrated. Peduncles 16, trifid, umbellate. Partial umbels capitate, roundish. — Yields a blackish or dull brown resin with a very powerful aromatic camphorated smell.

GROSSULACEÆ.

Nat. syst. ed. **2.** *p.* 26.

RIBES.

Calyx 5-lobed, the segments more or less coloured. Petals 5, minute, scale-like. Stamens 5, distinct, inserted in the throat of the calyx. Styles 1–2–3–4-cleft. Berry 1-celled, succulent, with narrow parietal placentæ. Seeds oblong, slightly compressed.

133. R. rubrum *Linn. sp. pl.* 290. *Eng. Bot.* t. 1289. *DC. prodr.* iii. 481. — Woods in many parts of Europe. (Red Currant.)

Leaves bluntly 3–5-lobed, downy beneath, smooth above. Racemes nodding. Bracts blunt, shorter than the pedicels. Calyx flattened out, spreading, with obtuse lobes. Petals somewhat obcordate. — The juice of the fruit is refrigerant, and very grateful to the parched palates of persons suffering from fever.

134. R. nigrum *Linn. sp. pl.* 291. *Eng. Bot.* t. 1291. *DC. prodr.* iii. 481. —Woods in some parts of Europe and Siberia. (Black Currant.)

Leaves 3–5-lobed, with glandular dots underneath. Racemes lax. Bracts minute, subulate or blunt, much shorter than the pedicel. Calyx campanulate, with reflexed segments. Petals oblong. Berries large and black. — Fruit, leaves, and wood, tonic and stimulant. A juice prepared from the fruit is used in domestic medicine against catarrhs.

BERBERACEÆ.

Nat. syst. ed. 2. p. 29.

BERBERIS.

Sepals 6, with 3 exterior scales. Petals 6, with 2 glands at the base. Stamens 6, without denticulations. Pericarp fleshy, oblong, 2–3-seeded. Seeds erect, oblong, with a crustaceous skin. — Primary leaves consisting of nothing but spiny ribs; only filling up with a web of parenchyma on the secondary branches.

135. B. vulgaris *Linn. sp. pl.* 472. *Fl. dan.* t. 904. *Eng. Bot.* t. 49. — Common throughout Europe and the North of Asia. (Common Barberry.)

An erect, deciduous shrub. Leaves somewhat obovate, divided at the edge by ciliated teeth, in their primary state 3-parted and spiny. Racemes many-flowered, lax, pendulous. Petals entire. Fruit bright red, very acid. — Bark astringent. A refreshing drink, prepared by crushing the fruit in water, is considered serviceable in fevers.

136. B. Lycium *Royle Illustr.* 64. *in Linn. trans.* vol. xvii. p. 83. — Λυκιον ινδικον *Dioscorid.* — Mountains in the North of India.

Spines 3-parted conical. Leaves 5–8 in a cluster, pale, leathery, veiny, oblong, lanceolate, or obovate, tapering to the base, mucronate; the margins spiny toothed or entire. Racemes 20-flowered, erect, spreading, becoming pendulous in fruit. Pedicels long simple. Flowers small. External scales lanceolate. Ovaries smooth, 4-seeded. Fruit ovate, obtuse at each end. — In India an extract prepared by digesting in water sliced pieces of the root stem and branches of this and other species of Barberry, is called *rusot*, and is used advantageously in cases of ophthalmia. Dr. Royle has seen it particularly useful when the acute symptoms have subsided; and others say that it is perhaps the best application in ophthalmia ever employed.

VITACEÆ.

Nat. syst. ed. 2. p. 30.

VITIS.

Calyx somewhat 5-toothed. Petals 5, cohering at the point, separating at the base, and dropping off like a calyptra. Stamens 5. Style none. Berry 2-celled, 4-seeded; the cells or seeds often abortive.

137. V. vinifera *Linn. sp. pl.* 293. *DC. prodr.* i. 633. *Woodv.* t. 195. *S. and C.* iii. t. 140. — Wild in the South of Asia *DC.* certainly so in Greece *Sibth.* (Common Grape-vine.)

Leaves lobed, sinuated, toothed, smooth or downy. "A variable plant; the leaves more or less lobed, smooth pubescent or downy, flat or crisp, pale or deep green; the branches prostrate climbing or erect, tender or hard; the bunches loose or compact ovate or cylindrical; the berries red, yellow or purple, watery or fleshy, globose ovate or oblong. Sweet musky or austere; seeded or seedless. *DC.*" — Ripe fruit cooling and antiseptic; in large quantities diuretic and laxative; very useful in bilious and putrid fevers, dysentry, and all inflammatory affections. Raisins more laxative than the fresh fruit.

CISSUS.

Calyx nearly entire. Petals 4, giving way from the base to the apex. Stamens 4. Ovary 4-celled. Berry 1–4-seeded.

138. C. setosa *Roxb. fl. ind.* i. 410. *DC. prodr.* i. 630. — Forests and hedges in Bengal.

Root fusiform, perennial. Stems herbaceous, succulent, round, striated, and covered with distinct, grandular, round-headed, white bristles, as is every part of the plant, even to the fruit. Tendrils opposite the leaves, generally 2-cleft. Leaves alternate, sessile, ternate, rarely quinate; the lateral leaflets sessile, the middle short-stalked, all oval, waved, fleshy, irregularly and coarsely edged by bristly serratures, both sides setose, as above described. Stipules cordate. Cymes axillary, solitary. Petals revolute. — Every part of the plant exceedingly acrid. The leaves toasted and oiled are applied to indolent tumours to bring them to suppuration.

139. C. acida *Linn. sp. pl.* 170, a South American plant, has the same properties.

140. C. salutaris *HBK* v. 225, from New Andalusia and Cumana, has a root useful in dropsical cases.

COMBRETACEÆ.

Nat. syst. ed. 2. p. 38.

TERMINALIA.

Flowers often polygamous from abortion. Limb of the calyx deciduous, campanulate, 5-cleft, the lobes acute. Petals wanting. Stamens 10, in a double row, longer than the calyx. Ovary 2–3-ovuled. Style filiform, somewhat acute. Drupe not crowned by the calyx, often dry, indehiscent, 1-seeded. Seed almond-like. Cotyledonss pirally convolute. — Trees or shrubs. Leaves alternate or rarely opposite, sometimes crowded towards the extremities of the branches. Flowers spiked: spikes racemose or panicled, bisexual in the lower part of the spike, male in the upper. *W. and A.*

141. T. Chebula *Retz obs.* v. 31. *Roxb. cor. pl.* t. 197. *DC. prodr.* iii. t. 12. *Roxb. fl. ind.* ii. 434. — Myrobalana chebula *Gærtn.* ii. t. 97. ? — Forests of Bengal.

Trunk rarely straight, and but short for the size of the tree. Bark in young trees of about 7 or 8 years' growth, of a light ash colour, and slightly cracked; their trunks are then from 2 to 3 feet in circumference 3 feet above ground. Branches many, spreading much in every direction, their extremities often drooping, and while young, downy. Leaves opposite, or nearly so, short-petioled, oblong, entire, obtuse; while young very downy on both surfaces, but when old underneath only; some small glands on the margins near the base, and generally 2 on the edges of the downy petioles near the apex; about 6 inches long and 3 broad. Stipules none. Spikes in a terminal panicle or axillary, and then generally undivided, downy. Flowers numerous, small, dull white, in smell offensive (as in most, if not all the other species,) all hermaphrodite. Bracts solitary, subulate, downy, 1-flowered. Calyx cup-shaped 5-toothed, very hairy, particularly the inside; with 5 very hairy glands in its bottom surrounding the base of the style. Filaments 10, alternately a little shorter, twice the length of the calyx. Anthers small, oval. Ovary inferior, oval, hairy, 1-celled, containing 2 ovules attached to the top of the cell. Style rather shorter than the stamens. Stigma acute. Drupe oval, about $1\frac{1}{2}$ inch long and 1 inch in diameter, smooth, of a pale greenish-yellow, very obscurely 5-angled, 1-celled. Pulp in considerable quantity, hard and yellowish. Nut oblong, thick, and very hard, with the surface rough; irregularly and obscurely 5-grooved, 1-celled. Seed solitary, lanceolate. Integument membranous. Albumen none. Embryo of the same shape as the seed, inverted. Cotyledons thin, large, spirally rolled up round each other and the lower part of the cylindrical superior radicle. — Galls powerfully astringent, as fit for making ink as oak-galls; they yield the chintz painters on the coast of Coromandel their best and most durable yellow. *Roxb.* With a ferruginous mud they strike an excellent black.

142. T. citrina *Roxb. fl. ind.* ii. 435. *DC. prodr.* iii. 12. — Myrobalanus citrina *Gærtn.* ii. t. 97. — Forests of Bengal.

Leaves somewhat opposite, short-petioled, from broad-lanceolate to oblong, tapering less at the base than at the apex, entire, rather obtusely acuminate, smooth and glossy on both sides, from 4 to 6 inches long and from 2 to 3 broad; when the plants are young the leaves are villous. Panicles terminal, and from the inferior axils, composed of many, simple, erect, slightly villous spikes. Flowers numerous, small, of a dull yellow, all hermaphrodite. Bracts solitary, 1-flowered, subulate, smooth. Calyx cup-shaped, 5-toothed, hairy on the inside, having 5 very hairy glands at the bottom round the base of the style. Filaments 10, alternately shorter, but all much longer than the calyx, and inserted into its inside. Anthers oval. Ovary 1-celled, containing 2 ovules attached to the top of the cell. Style shorter than the stamens, smooth; stigma acute. Drupe oblong-lanceolate, about 2 inches long and 2 in circumference where thickest; while fresh obscurely 5-cornered, but more clearly so when dry, of a dull orange yellow, and smooth. Nut oblong, deeply 5-grooved, with the 5 angles sometimes sharp, sometimes rounded, 1-celled. Seed solitary, linear-lanceolate. Testa single, thin, of a light brown.— Fruit a common article in the Hindoo Materia medica. Usually employed as a gentle purgative.

143. T. alata *Roth. nov. sp.* 379. — Pentaptera tomentosa *DC. prodr.* iii. 14. *Roxb. Fl. ind.* ii. 440. — T. tomentosa *W. and Arnott. prodr.* i. 314. — Various parts of India.

Bark deeply cracked. Leaves nearly opposite, linear-oblong, obtuse, somewhat cordate at the base, crenulate, pubescent, but finally glabrous above, tomentose or pubescent beneath, with some thick stalked turbinate glands on the midrib near the base. Fruit glabrous. *W. and A.* — Bark astringent and febrifugal.

144. T. moluccana *Lam. dict.* i. 349. *Roxb. fl. ind.* ii. 433. *DC. prodr.* iii. 11. — Mountainous countries north-east of Bengal; the Malayan Archipelago.

Trunk straight, about 50 feet high. Branches horizontal. Bark pretty smooth, and of a dark brown colour. Leaves alternate, short-stalked, oblong, obtuse, entire, smooth on both sides, beautifully reticulated with minute veins; while young coloured and villous, from 2 to 12 inches long, and broad in proportion. Petioles scarcely ¼ the length of the leaves, round, smooth, without glands. Spikes axillary, solitary, shorter than the leaves. Flowers numerous, of a dull yellowish-brown colour, and rather offensive smell; male towards the apex, and hermaphrodite below. Calyx flat, with the apices of the 5 divisions revolute, villous on the outside, and woolly within. Filaments 10, twice or more longer than the calyx. Ovary and style in the male small and abortive, in the hermaphrodite larger and longer. Drupe round-obovate, somewhat villous, size of a large nutmeg. Nut the shape of the drupe, slightly 5-grooved from the apex to the base. — Uses as in T. belerica, for which it is substituted in India.

145. T. latifolia *Swartz fl. ind. occ.* ii. 747. *DC. prodr.* iii. 12. — Woods in the northern mountains of Jamaica.

Leaves alternate, obovate, narrowly wedge-shaped at the base, obtuse,

somewhat entire, smooth on each side. Petioles without glands. Racemes the length of the leaves. Drupe ovate, acuminate, boat-shaped, between fleshy and leathery. Ribs of the young leaves and calyces downy. — Root used in Jamaica in diarrhœa.

146. T. Benzoin *Linn. f. suppl.* — Croton Benzoe *Linn. mant.* 297. — Catappa Benzoin *Gœrtn.* ii. t. 127. T. angustifolia *Jacq. hort. vind.* iii. t. 100. *DC. prodr.* iii. 11. — East Indies.

Leaves linear-lanceolate, somewhat repand, attenuated at both ends, the under side and the petioles pubescent or hairy. Glands 2, at the apex of the petiole. Drupes compressed, 2-winged, gibbous on one side. *W. and A.* — A milky juice flows from the stem, and concretes into a fragrant substance resembling Benzoin, and used in churches in the Mauritius as a kind of incense. *Royle.*

147. T. belerica *Roxb. corom.* ii. 198. *Fl. ind.* ii. 431. *DC. prodr.* iii. 12. — Myrobalanus belerica *Gœrtn.* ii. t. 97. Tani *Rheed.* iv. t. 10. — Mountainous parts of the Circars of India.

Leaves crowded about the extremities of the branches, petioled, oval, entire, firm, smooth, 6 or 7 inches long, and 2½ broad. Petioles round, from 2 to 3 inches long, with two opposite glands on the upper side of the apex, and sometimes near the base. Spikes axillary, solitary, simple, erect. Flowers small, of a dirty grey colour. The male flowers towards the apex of the spike; the hermaphrodite ones below. Drupe oval, somewhat pentagonal, the size of a nutmeg, fleshy, covered with a grey silk down. — Kernels of the fruit eaten in India and reckoned intoxicating. Bark abounding in a gum, resembling Gum Arabic, soluble in water, burning away in the flame of a candle. Ainslie reckons the fruit astringent, tonic, and attenuant.

ALANGIACEÆ.

Nat. syst. ed. 2. p. 39.

ALANGIUM.

Calyx 5–10-toothed. Petals 5–10. Stamens twice or more times as many as the petals; filaments very hairy towards the base. Ovary 1-celled: ovule solitary. Drupe 1-seeded.—Some of the branches occasionally become spinescent. Young branches, petioles, and nerves, puberulous. Leaves obtuse or acute, and nearly equal at the base, reticulated on the under side with transverse veins. *W. and A.*

148. A. decapetalum *Lam. dict.* i. 174. *DC. prodr.* iii. 203. — Alangi and Angolam *Rheede.* iv. t. 17. — Stony mountains of Malabar.

Leaves narrow, oblong, sometimes shortly and bluntly acuminated. Petals 6–10. — See next species.

149. A. hexapetalum *Lam.* l. c. *DC. prodr.* iii. 203. — With the last called Kara-Angolam and Namèdou.

Leaves elliptic or ovate-lanceolate, with a longish sudden acumination. Petals 6–7. — Roots aromatic; said by the Malays to have a purgative hydragogue property. *Royle.*

MYRTACEÆ.

Nat. syst. ed. 2. p. 43.

MELALEUCA.

Calyx-tube nearly hemispherical; limb 5-partite. Petals 5. Stamens numerous, combined into 5 elongated bundles, which alternate with the petals. Anthers incumbent. Style filiform. Stigma obtuse. Capsule connate with and enclosed in the thickened tube of the calyx, which is sessile on and adnate at its base to the flower-bearing branch: 3-celled, many-seeded. Seeds angular. — Trees or shrubs. Leaves alternate or opposite, quite entire, equal at the base. Flowers perfectly sessile or somewhat combined with the branch, arranged in spikes or heads, white or yellowish or purplish. *W. and A.*

150. M. Cajuputi *Roxb. fl. ind.* iii. 394. *W. and Arn.* i. 326. *S. and C.* ii. t. 84.—M. minor *Smith in Rees. DC. prodr.* iii. 212. M. Leucadendron *Lam. illustr.* t. 641. f. 4. Arbor alba javanica *Rumph.* ii. 74. — Moluccas.

Trunk tolerably erect, but crooked, and slender for the age of the trees. Bark of a very light or whitish ash-colour, soft, thick, and spongy, pretty smooth on the surface, the exterior part peeling off from time to time in thin flakes, like that of the birch tree; and the interior part separable into numerous lamellæ, like the leaves of a book. Branches scattered, with the slender twigs often drooping as completely as in the weeping willow, round and smooth; young shoots sericeous. Leaves alternate, projecting in every direction, but most frequently vertical, short-stalked, narrow-lanceolate, while young sericeous, sometimes slightly falcate, entire, from 3 to 5 inches long and from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch broad; on being bruised they smell strong of the balsam they yield, yet the cells which contain this aromatic fluid, are scarcely visible in the fresh leaves. Spikes terminal, and from the extreme axills, downy; while in flower there is only a scaly conic bud at the apex, which soon advances into a leafy branchlet. Bracts solitary, lanceolate, silky, 3-flowered, caducous. Flowers ternate, sessile, small, white, scentless. Calyx urceolate, half-superior, sericeous; margins of 5 rounded deciduous segments. Petals 5, orbicular, short-clawed, white, much longer than the segments of the calyx. Filaments from 30 to 40, united into five portions at the base, 3 or 4 times longer than the petals, and with them inserted into the large, villous, 5-lobed rim of the calyx, alternate with its segments. Anthers ovate-cordate, with a yellow gland on the apex. Ovary ovate, with the lower half united to the calyx, 3-celled, with numerous ovules attached to an elevated receptacle in the inner and lower angle of each cell; style rather longer than the stamens; stigma obscurely 3-lobed. Capsules completely enveloped in the thick, fleshy, gibbous, permanent calyx, 3-lobed,

3-celled, 3-valved; valves thin, hard, and elastic, opening from the apex. Seeds numerous, angularly wedge-shaped. — This is the species that yields Cajuputi, an irritating or stimulating, green, aromatic camphorate essential oil used in toothach and rheumatic affections and as an internal remedy in hysteria and epilepsy, flatulent colic, and cholera.

151. M. Leucadendron *Linn. mant.* 105. by some said to yield cajuputi oil, is asserted by Roxburgh to possess little or no fragrance in its leaves, and not be ever employed, as far as he could discover, in the distillation of that drug.

PUNICA.

Calyx turbinate 5–7-cleft: æstivation valvate. Petals 5–7. Stamens numerous; filaments distinct. Style filiform. Stigma capitate. Fruit large, globose, crowned by the somewhat tubular limb of the calyx, baccate, indehiscent, covered with the tube of the calyx, divided horizontally into 2 parts by a very irregular confused dissepiment: the lower division 3-celled, the upper 5–9-celled; dissepiments membranaceous: placentæ in the lower division at the bottom; in the upper stretching from the side of the fruit to the middle. Seeds numerous, nestling in a pellucid pulp. Embryo oblong: radicle short, acute; cotyledons foliaceous, spirally convolute. — Small trees or shrubs with spinescent branchlets. Leaves deciduous, opposite, rarely verticillate or alternate, often axillary and fascicled, oblong, quite entire, not dotted. Flowers 2–3, nearly sessile on somewhat terminal branchlets, usually scarlet. *W. and A.*

152. P. Granatum *Linn. sp. pl.* 676. *Bot. mag.* t. 1832. *DC. prodr.* iii. 3. *Fleming in As. Research.* xi. 175. *Woodv.* t. 58. *S. and C.* i. t. 57. — Bengal, Persia, China, Barbary. There are whole woods of Pomegranate trees in the Persian province of Mazenderan. *Burnes' Travels,* ii. 126. (Pomegranate.)

Arborescent. Leaves oblong, inclining to lanceolate. Flowers large, red, with a pale succulent calyx. Petals much crumpled, membranous. Fruit a round leathery pericarp, crowned by the prominent hardened tube of the calyx, and containing several irregular cells filled with seeds covered with a bright red, succulent, acid coat. — A decoction of the bark of the root a powerful anthelmintic. The flowers are tonic and astringent, as is the bark of the fruit which is used in leucorrhœa, chronic dysentery, &c. The acid juice of the seeds found useful in bilious fevers.

MYRTUS.

Calyx-tube somewhat globose: limb 5 or very rarely 4-partite. Petals 5 or very rarely 4. Stamens distinct. Berry 2–3-celled, somewhat globose, crowned with the segments of the calyx. Seeds (ripe) in each cell several, or very rarely solitary, reniform: testa bony. Embryo curved: cotyledons semicylindrical, very short: radicle twice the length

of the cotyledons. — Shrubs. Leaves opposite, quite entire, pellucid-dotted. Peduncles axillary, 1 or rarely 3-flowered. *W. and A.*

153. M. communis *Lin. sp. pl.* 673. *DC. prodr.* iii. 239. — Rocks and heaths of the South of Europe.

Leaves ovate or ovate-lanceolate, acute, shining, evergreen. Pedicels solitary 1-flowered, about as long as the leaf. Bractlets 2, linear, deciduous, under the flower. Calyx 5-cleft. Flowers white. Fruit oval, deep purple. — Aromatic and astringent. In many parts of Greece, Italy and Provence the bark is used for tanning. Myrtle buds and berries were eaten as spices by the ancients, and are still used in Tuscany instead of pepper. The Tuscans also prepare a sort of Myrtle wine which they call Myrtidanum. The distilled water of Myrtle flowers is that very agreeable perfume known in France under the name of 'Eau d'Ange.' *Burnett.*

CARYOPHYLLUS.

Tube of the calyx cylindrical; limb 4-parted. Petals 4, adhering by their ends in a sort of calyptra. Stamens distinct, arranged in 4 parcels in a quadrangular fleshy hollow, near the teeth of the calyx. Ovary 2-celled; ovules about 20 in each cell. Berry 1–2-celled, 1–2-seeded. Seeds cylindrical, or half-ovate. Cotyledons thick, fleshy, convex externally, sinuous in various ways internally.

154. C. aromaticus *Linn. sp.* 735. *DC. prodr.* iii. 262. *Bot. mag* t. 2749. *S. and C.* ii. t. 95. *Woodv.* t. 135. — Caryophyllus *Rumph.* ii. t. 1. 2. 3. — Molucca Islands. (Clove.)

A moderately-sized tree, whose outline or circumscription is somewhat conical or pyramidal, bearing numerous opposite branches which are more or less virgate. Whole plant everywhere glabrous. Leaves opposite and decussate, persistent, somewhat coriaceous and shining, minutely punctated, about four inches long, ovate-lanceolate, more or less acute, quite entire, pale beneath, tapering gradually at the base into a slender footstalk, which is almost 2 inches long. Panicles short, terminal, of many flowers, and always trichotomously divided, jointed at every division. Peduncles terete, green. Calyx of 4, ovate, concave segments, erecto-patent, placed upon the top of the ovary, and together with it, is first green and then red, coriaceous. Petals 4, larger than the calyx, imbricated into a globe in bud, at length spreading, roundish, concave, yellowish-red, very soon caducous. In the centre of the calyx, and occupying the top of the ovary, is a quadrangular elevated line or gland, surrounding, but not embracing the base of the shortish, obtusely subulate style. Around this gland, immediately within the petals, the stamens are inserted; but as their insertion does not extend to the angles of the gland, they appear to be collected into four bundles, numerous. Filaments much longer than the petals, yellow. Anthers ovate-cordate, yellow, 2-celled. Ovary oblong, or almost cylindrical, 2-celled, with many small ovules in each cell, attached to the sides of the dissepiment. All these become abortive; or one proves fertile, and by its great enlargement destroys the

appearance of the rest of the ovules, and of the second cell; so that the fruit which forms a rather large elliptical purple berry is only 1-seeded: this is of the same shape as the berry; its integument thin, and of a soft texture. Embryo likewise elliptical, large, greenish, fleshy, dotted. Cotyledons unequal, sinuose; the larger one partly enveloping the smaller, including the superior radicle. *Bot. Mag.* — Stimulant and carminative, similar in effects to Eugenia Pimenta. The cloves of the shops are the dried flower-buds. Oil of cloves is a common remedy for toothach.

EUGENIA.

Calyx-tube nearly globose: limb divided down to the ovary into 4 or rarely 5 segments. Petals 4 or rarely 5. Stamens numerous, distinct. Ovary 2-celled; the cells often divided by the large placentæ reaching almost to the sides, and there split into 2 divaricating segments bearing the ovules: ovules several in each cell. Berry nearly globose, crowned by the segments of the calyx, eventually 1 or rarely 2-celled. Seeds 1–2, large. Cotyledons very thick and fleshy, partially or completely combined into one mass with the radicle: radicle very short, scarcely distinguishable. — Trees or shrubs. Leaves opposite, quite entire, pellucid-dotted. Peduncles axillary or terminal, solitary, or several together, simple and 1-flowered, or racemose-cymose, or panicled. *W. and A.*

155. E. acris *W. and Arn. prodr.* i. 331.—Myrtus acris *Swartz fl. ind. occ.* ii. 909.—Myrcia acris *DC. prodr.* iii. 243. *Bot. mag.* t. 3153. — West India Islands. (Wild Clove.)

Arborescent, glabrous: young branches acutely 4-angled. Leaves elliptic-oval, obtuse, more or less convex, coriaceous, very glabrous, upper side reticulated with elevated veins, finely pellucid-dotted. Peduncles compressed, axillary and terminal, trichotomous, corymbose, rather longer than the leaves. Calyx-limb 5-partite; segments roundish. Style filiform, acute. Berry globose, 1–4-seeded. *W. and A.* — Supposed to have been confounded with E. Pimenta, in whose aromatic qualities it altogether participates.

156. E. Pimenta *DC. prodr.* iii. 285. — Myrtus Pimenta *Linn. sp. pl.* 676. *Swartz obs.* 202. *Bot. Mag.* t. 1236. *Woodv.* t. 26. *S. and C.* ii. t. 124. — West Indies. (Pimento or Allspice.)

Branches round; twigs compressed, the younger and the pedicels downy. Leaves oblong or oval, with pellucid dots, somewhat opaque, smooth. Panicles axillary and terminal, trichotomous. Some flowers 4-fid and subsessile in the forks of the panicle. Berry globose, 1-seeded, black, the size of a pea. Embryo roundish with the cotyledons consolidated. — All the plant, especially the unripe fruit, abounds in an essential oil, which is a powerful irritant and is often used to allay toothach. The bruised berries are carminative, stimulating the stomach, promoting digestion, and relieving flatulency.

CALYPTRANTHUS.

Tube of the calyx obovate; limb before flowering entire, at the time of flowering cut round the base and forming a lateral deciduous operculum. Petals none, or 2–3, very small. Stamens numerous; filaments capillary; anthers small, round, 2-celled; cells 2–4-seeded; style 1; stigma simple. Berry abortive, 1-celled, 1–4-seeded.

157. C. aromatica *A. de St. H. pl. us.* t. 14. *DC. prodr.* iii. 258. — The forests of Rio Janeiro.

A shrub. Leaves connate, oblong-elliptical, quite smooth. Peduncles panicled, axillary or terminal, in pairs, long. Petals 2–3, small, greenish. — Young flower-buds have much the same qualities as cloves, for which they might be advantageously substituted according to Aug. de St. Hilaire.

EUCALYPTUS.

Tube of the calyx obovate or globose, cup-shaped, permanent; limb entire, resembling a lid, cut all round the base, and wholly deciduous. Petals none. Stamens numerous, distinct. Capsule 4-celled, or by abortion 3-celled, many-seeded, opening at the apex. — New Holland trees of a considerable size. Leaves usually alternate, sometimes opposite.

158. E. resinifera *Smith in White's Voyage*, 331. t. 25. *Exot. bot.* ii. t. 84. *Bot. repos.* t. 400. — Metrosideros gummifera *Gœrtn.* i. t. 34. f. 1. — New Holland.

Leaves with very minute and numerous little dots, ovate-lanceolate, with long tapering points, narrowed to the base, with a vein next the margin. Flowers umbellate, on a compressed peduncle rather longer than the petiole. Lid conical, taper, leathery, twice as long as the capsule. — Bark so extremely astringent as to yield a concrete juice resembling Kino, and sold as such.

159. E. robusta *Smith in Linn. trans.* iii. p. 283. often contains large cavities in its stem, between the annual concentric circles of wood, filled with a most beautiful red or rich vermilion coloured gum.

160. E. mannifera *Mudie in med. bot. trans.* 1834, p. 211, in New Holland exudes a saccharine mucous substance resembling manna in action and appearance, but less nauseous. It is not produced by insects, and only appears in the dry season. *Med. Bot. trans.* l. c. Other species yield a similar secretion at Moreton Bay and in Van Dieman's Land. Mr. Backhouse says it coagulates and drops from the leaves in particles often as large as an almond. *Comp. Bot. Mag.* ii. 69.

BARRINGTONIEÆ.

BARRINGTONIA.

Calyx-tube ovate: limb 2–3–4-partite; lobes ovate, obtuse, concave, persistent. Petals 4, coriaceous, attached to the ring at the base of the stamens. Stamens numerous, in several rows: filaments filiform, long, distinct, combined at the base into a short ring, all bearing anthers. Ovary 2–4-celled, surmounted by an urceolus sheathing the base of the style: ovules 2–6 in each cell. Style filiform. Stigma simple. Fruit fleshy, more or less 4-angled, crowned by the limb of the calyx, 1-celled. Seed solitary. Embryo large, fleshy, not separable into cotyledons and radicles, formed of 2 concentric homogeneous combined layers.— Trees. Leaves crowded about the ends of the branches, opposite or verticillate, obovate, quite entire or crenated or serrated, without pellucid dots. Flowers racemose. *W. and. A.*

161. B. racemosa *Roxb. fl. ind.* ii. 634. *DC. prodr.* iii. 288. *W. and Arn.* i. 333. — Eugenia racemosa *Linn. sp.* 673. Samstravadi *Rheede* iv. t. 6. Stravadium racemosum *Jussieu.* — Jungle of Malabar.

Leaves cuneate-oblong, acuminated, serrulated or crenulated. Flowers (large) forming a long pendulous raceme; pedicels scarcely so long as the flower, with a single bract at the base. Calyx 2–3-cleft. Ovary 2-celled; ovules attached to the middle of the dissepiment. Fruit ovate, bluntly 4-angled; endocarp scarcely separating from the epicarp. *W. and A.* — Root slightly bitterbut not unpleasant. It is considered by the Hindoo doctors valuable on account of its aperient, deobstruent, and cooling properties. The bark is reputed to possess properties similar to those of Cinchona. *Ainslie.*

GUSTAVIA.

Tube of the calyx turbinate; the limb entire or 4–6–8-lobed. Petals 4–6–8, ovate, nearly equal. Stamens 00, monadelphous at the base, and somewhat adnate to the claws of the petals. Ovary 4–6-celled; ovules numerous; style short; stigma obtuse. Capsules ovate or subglobose, 3–6-celled, coriaceous, indehiscent, with an umbilicated eye, formed of the remains of the calyx. Seeds a few in each cell, ovate, with a coriaceous integument, suspended by a long plaited cord to a central column. Embryo fleshy; cotyledons 2, large, equal, plano-convex; radicle obtuse, scarcely prominent.— Trees. Leaves alternate, large, not dotted, serrated or entire, smooth. Racemes terminal, few-flowered. Flowers white, showy, with a pair of bracts. *DC.*

162. G. speciosa *DC. prodr.* iii. 289. — Pirigara speciosa *HBK.* 7. 200. — Near Maraquita in New Granada. (Chupa.)

Petals 6. Calyx nearly entire, together with the pedicels and ovary downy. Leaves oblong-lanceolate, acuminate, narrowed to the base, entire, coriaceous. — Introduced here for its singular effects upon the constitution. According to Humboldt and Bonpland children are very fond of the fruit, and become quite yellow after eating it, but in 24–48 hours they regain their natural colour without any remedy. This is singular enough; but is improved in Mr. Burnett's Outlines of Botany where it is asserted, by some strange mistake, that "after it remains for 24 or 48 hours, *nothing can erase the colour!*"

CORNACEÆ.

Nat. syst. ed. 2. *p.* 49.

CORNUS.

Calyx with a very small 4-toothed limb. Petals 4, oblong, sessile. Stamens 4. Style 1. Drupe baccate, marked with traces of a calyx. Stone 2-celled, rarely 3-celled. Seeds solitary pendulous. Albumen fleshy. Radicle of the embryo shorter than the cotyledons.

163. C. florida *Linn. sp. pl.* 171. *Bot. Mag.* t. 526. *Mich. arbres forestiers* iii. 138. *Bigelow med. bot.* ii. t. 28. *DC. prodr.* iv. 273. — Moist forests in the United States, especially on the borders of swamps.

Wood very compact, covered with a rough broken bark. Branches smooth, covered with a reddish bark, marked with rings at the place of the former leaves. Leaves small at the flowering time, opposite, petioled, oval, acute, entire, nearly smooth, paler beneath, and marked, as in others of the genus, with strong parallel veins. Flowers, very small, in heads or sessile umbels, upon peduncles an inch or more in length, surrounded by a large spreading involucre, constituting the chief beauty of the tree when in flower. Involucre composed of 4 white, nerved, obovate leaves, having their point turned abruptly down or up, so as to give them an obcordate appearance. Calyx superior, somewhat bell-shaped, ending in 4 obtuse spreading teeth. Petals 4, oblong, obtuse, reflexed. Stamens 4, erect; anthers oblong, with the filaments inserted in their middle. Style erect, shorter than the stamens, with an obtuse stigma. Fruit an oval drupe of a glossy scarlet colour, containing a nucleus with 2 cells and 2 seeds. — Bark a powerful bitter, with an astringent and somewhat aromatic taste. It acts as a tonic, astringent and antiseptic, approaching Cinchona in its general effects, and not inferior to it in the cure of intermittents. *Bigelow.* The young branches stripped of their bark, and rubbed with their ends against the teeth, render them extremely white. From the bark of the roots the Indians extract a good scarlet colour. *Barton.*

164. C. sericea *L'herit. corn.* No. vi. t. 2. *DC. prodr.* iv. 272. — C. cærulea *Lam. dict.* ii. 116. C. lanuginosa *Mich. fl. bor. amer.* i. 92. — Moist woods in the United States.

A shrub. Branches spreading; twigs downy. Leaves ovate acuminate, with a brown silky down underneath. Corymbs depressed, downy. Drupes globose, blue; stone compressed. — Said to be one of the best tonics in North America, nothing having been found in the United States that so effectually answers the purpose of Peruvian Bark in intermittent fevers. *Barton.*

165. C. circinata *L'Herit. corn.* No. 8, has been recommended in diarrhœa.

166. C. suecica *Linn. sp.* 172, is reputed to have tonic berries which increase the appetite, whence its Highland name Lus-a-chrasis or plant of gluttony. *Burnett.*

CUCURBITACEÆ.

Nat. syst. ed. 2. *p.* 51.

FEUILLEA.

Flowers dicœcious. ♂. Calyx 5-cleft beyond the middle. Petals 5, somewhat united at base. Stamens 5, or 10, half being sterile; anthers 2-celled, double. ♀. Calyx with a 5-cleft limb. Petals 5, distinct, oblong. Sterile stamens 5, occasionally alternate with the petals. Styles 3, with broad bluntly bifid stigmas. Fruit globose, fleshy, with a circular scar round the middle, and 5 other scars; 3-celled, with a solid rind, and a central fleshy 3-cornered axis. Ovules numerous, standing erect upon the axis. — Tropical American herbaceous plants. Leaves alternate, stalked, cordate, smooth. Flowers small. Seeds oily, bitter.

167. F. trilobata *Linn. sp. pl.* ed. 1. 1014. *DC. prodr.* iii. 298. — F. scandens β *Linn. sp. pl.* ed. ii. 1457. F. hederacea *Poir. dict.* iv. 419. Ghandirhoba or Nhandirhoba *Marcgr. Bras.* 46. *ic. inf.* — Brazil.

Leaves somewhat glandular on both sides, 3-parted or 3-fid, the lobes of the lower ones obtuse, of the upper acute. — The bitter seeds of this and the following are asserted by Drapiez to be a powerful antidote against vegetable poisons. *Ed. P. J.* iv. 221. They purge and vomit with rapidity.

168. F. cordifolia *Poir. dict.* iv. 418. *DC. prodr.* iii. 298. — F. hederacea *Turp in dict. sc. nat. ic.* F. scandens *Linn. sp. pl.* 1457. — West India islands.

Leaves without glands, cordate, acuminate, undivided or somewhat 3-lobed, rather serrated.

LAGENARIA.

Flowers monœcious. Calyx campanulate, with subulate or broadish segments shorter than the tube. Corolla white; petals obovate, spreading below the edge of the calyx. ♂. Stamens 5, triadelphous, the 5th distinct. ♀. Stigmas 3, subsessile, thick, 2-lobed, granulated. Fruit 3–5? celled. Seeds obovate, compressed, tumid at the margin, 2-lobed at the apex.

169. L. vulgaris *Seringe in DC. prodr.* iii. 299. — Cucurbita lagenaria *Linn. sp. pl.* 1434. Belaschora *Rheede.* viii. t. 1. — East Indies. (Bottle gourd.)

The whole plant with a musky scent, and soft with down. Stem climbing; tendrils 3–4 cleft. Leaves cordate, entire, downy, somewhat glaucous, with 2 glands at the base. Flowers stellated, very spreading,

clustered. Anthers with their connective covered by oblong ovate acute papillæ. Fruit downy, smooth, tapered into a long slender stalk above the insertion of the calyx. — In the wild state this plant produces poisonous fruit. Some sailors died at one of our outports a few years since from drinking beer that had been standing in a flask made of a bottle gourd. Dr. Royle says that he learned from a very respectable and intelligent native doctor attached to the gaol hospital at Saharumpore that he had seen a case of poisoning from eating of the bitter pulp, in which the symptoms were those of cholera.

CUCUMIS.

Flowers monœcious. Calyx tubular-campanulate, with subulate segments scarcely the length of the tube. Petals scarcely adhering to each other. ♂. Stamens 5, triadelphous. ♀. Stigmas 3, thick, 2-parted. Fruit 3–6-celled: seeds compressed, ovate, not tumid at the edge.

170. C. utilissimus *Roxb. fl. ind.* iii. 721. — Higher cultivated lands of Bengal.

An annual. Stems exactly as in the common cucumber, but not quite so extensive. Tendrils simple. Leaves broad-cordate, generally more or less 5-lobed; lobes rounded, toothletted; above pretty smooth, below scabrous, the largest generally about 6 inches each way. Floral leaves of the female flowers sessile, and very small. Male flowers axillary, peduncled, crowded, but opening in succession. Female flowers axillary, peduncled, solitary; both sorts yellow, about an inch or an inch and a half in diameter. Fruit fleshy, generally a very perfect oval; when young, downy and clouded with lighter and darker green; when ripe, perfectly smooth, variegated with deeper and lighter yellow; from 4 to 6 inches long, and from 3 to 4 in diameter. — The powder of the toasted seeds is said to be a powerful diuretic, and serviceable in promoting the passage of sand or gravel. *Roxb.*

171. C. Colocynthis *Linn. sp. pl.* 1435. *DC. prodr.* iii. 302. *Woodv.* t. 175. *S. and C.* iii. t. 138. — Κολοκυνθις *Diosc.* — Common on the sandy lands of Coromandel, in Egypt, Palestine, Turkey, and all the islands of the Grecian Archipelago.

Stem prostrate, hispid. Leaves cordate, ovate, many-lobed, white with hairs beneath: the lobes obtuse; petioles as long as the lamina. Tendrils short. Flowers axillary, solitary stalked; females, with the tube of the calyx globose, and somewhat hispid, the limb campanulate with narrow segments. Petals small. Fruit globose, smooth, size of an orange, yellow when ripe, with a thin solid rind, and a very bitter flesh. — The fruit contains the intensely bitter resinoid called Colocynthin; it is very acrid, and a considerable number of severe cases of poisoning have occurred in the human subject. Nevertheless in combination with other substances, the extract is one of the commonest of cathartics.

172. C. Hardwickii *Royle Illustr.* 220. t. 47. f. 3. a. — Foot of the Himalaya, and called "Puharee indrayun" or hill colocynth.

Stems slender, climbing, very scabrous, with white, frequently hair-bearing glands. Leaves cordate, acuminate, somewhat 5-lobed, or 5-angled; angles acute; upper surface very hairy, under less so, margins undulately crenate, minutely toothed. Male flowers 1 or 2 together; female solitary. Calyx of each very hairy. — Fruit oval, oblong, rounded at both ends, from 2–3 inches long, and about half as broad, marked with narrow white stripes; flesh very bitter. *Royle.* — Similar in quality to Colocynth.

173. C. pseudo-colocynthis *Royle Illustr.* 220. t. 47. f. 2. b.— Plains of northern India, where it is called "Indrayun" and "Bisloombha."

Stems slender, prostrate and radiating, very scabrous. Leaves scabrous on both sides, with white gland-like hair-bearing tubercles, 5-lobed; lobes as well as the angles rounded, the former slightly toothed, the terminal one broader, cuneate, subdivided into 3 smaller lobules. Male flowers generally solitary, as are the female, and long peduncled. Calyx tube oblong, hispid; segments narrow, linear, and pointed. Fruit oblong and smooth, marked with 8 broad stripes. Flesh very bitter. *Royle.* — Substituted in Northern India for the true Colocynth.

LUFFA.

♂. Flowers panicled, yellow. Tube of calyx hemispherical; segments longer than the tube. Petals distinct, dropping off by the base. Stamens 5, distinct, anthers very wavy. ♀. Flowers solitary. Tube of calyx oblong-clavate; segments shorter than the tube. Stamens abortive. Stigmas reniform. Gourd ovate, 3-celled, fibrous internally, operculate.

174. L. amara *Roxb. fl. ind.* iii. 715. — Cucumis indicus, &c. *Pluk.* t. 172. f. 1. — Hedges and dry uncultivated places in the East Indies.

Stems several, slender, running to a great extent, but with few branches, pretty smooth, 5-sided. Tendrils 3-cleft. Leaves slightly 5–7-lobed, rough; stipules axillary, solitary, cordate, with glandular marks on one side. Male flowers pretty large, yellow, on long, erect, axillary racemes; the pedicels with a glandular bract near the base, and articulated a little above it. Female flowers rather larger, axillary, solitary, peduncled. Fruit oblong, 3 or 4 inches long, and 1 in diameter, tapering equally towards each end, 10-angled, when ripe dry, gray, and filled with dry fibres; the operculum deciduous. Seeds blackish gray, with elevated minute black dots. — Every part extremely bitter. Fruit violently cathartic and emetic. Juice of roasted young fruit applied to the temples by the natives of India to cure headach. Ripe seeds, either in infusion or substance used by them to vomit and purge.

175. L. Bindaal *Roxb. fl. ind.* iii. 717. — Hindostan.

Diœcious, climbing. Leaves 5-angled, toothed. Male flowers in racemes. Females solitary. Fruit round, echinate, with long firm

straight ciliate bristles. — Considered in Northern India a powerful drastic in cases of dropsy. *Royle.*

BRYONIA.

Flowers monœcious or dicœcious. Petals hardly united at the b se. ♂. Calyx 5-toothed. Stamens 3-adelphous; anthers flexuose. ♀. Style 3-fid. Fruit ovate or globose, smooth, few-seeded. Seeds ovate, scarcely compressed, more or less edged. Tendrils simple, seldom forked.

176. B. rostrata *Rottl. n. act. berol.* iv. 212. *DC. prodr.* iii. 304. — Tranquebar.

Stem filiform, furrowed. Leaves cordate, obtuse, toothletted, scabrous. Peduncles axillary, solitary. Fruit ovate, angular, acuminate. — Root prescribed in India as an astringent and emollient poultice in cases of piles. It is also used as a demulcent in form of powder. *Ainslie.*

177. B. alba *Linn. sp.* 621. *Blackw. herb.* t. 533. *Lam. illustr.* t. 796. *DC. prodr.* iii. 307. — Vineyards and woods in the middle and South of Europe.

Root large, fleshy, white. Stem climbing. Leaves cordate, 5-lobed, angular, toothed, bristly with callosities on both sides. Flowers racemose, monœcious. Berries black. — Properties like those of the next species.

178. B. dioïca *Jacq. fl. austr.* t. 199. *E. Bot.* t. 459. *Mill. ic.* t. 71. *S. and C.* i. t. 64. — B. alba *Woodv.* t. 189. — Common in hedges. (Bryony; Wild vine.)

Root large, long, fleshy, white. Stems annual, scabrous, scrambling among bushes by aid of their tendrils. Leaves 3–4 inches broad, with 5 angular lobes, rough all over with minute callosities. Flowers white with green veins, on panicled axillary stalks, male on one plant, female on another, when young but when old becoming monœcious. Berries small, scarlet, fetid when bruised. — Root acrid and purgative, owing to the presence of an extractive matter called Bryonine. It produces violent vomiting and purging, tormina, profuse watery evacuations, and fainting. It is not admitted into the British pharmacopœias, but is a frequent instrument in the practice of quack doctors in the country. Burnett says it is sold in Covent Garden market as a discutient to remove the bruise of a blackened eye. Withering considers it one of the best cathartic medicines for horned cattle.

MOMORDICA.

Flowers monœcious, yellow or white. ♂. Calyx 5-cleft, with a very short tube. Corolla 5-parted. Stamens triadelphous; with connate anthers. ♀. Filaments 3, sterile. Style 3-fid. Ovary 3-celled. Fruit opening with elasticity when ripe. Seeds compressed, reticulated.

179. M. Elaterium *Linn sp. pl.* 1434. *Bot. mag.* t. 1914. *Blackw. herb.* t. 108. *S. and C.* i. t. 34. — Σικυς ἄγριος *Dioscor.* Ecbalium officinale *N. and E. handb.* iii. 101.—South of Europe.

Hispid, scabrous, glaucous. Stem prostrate, without tendrils. Leaves cordate, somewhat lobed, crenate-toothed, very rugose, on long stalks. Fruit oblong, obtuse at each end, hispid, disarticulating from its stalk with violence and expelling its seeds and mucus with considerable force in consequence of the sudden contraction of the sides.— Elaterium, a substance obtained from the juice surrounding the seeds of this plant is so powerful a poison that a single grain has been known to act violently on man; but its strength and effects are uncertain. It is used in practice in the form of an extract, as a violent cathartic and hydragogue. Dr. Christison quotes a case of a medical man in Paris, who, after carrying a specimen to his lodgings in his hat was seized in half an hour with acute pain &c. in his head succeeded by colic pains, fixed pains in the stomach, frequent watery purging, bilious vomiting, and some fever.

180. M. Balsamina *Linn. sp.* 1453 is supposed to be the plant called *Neurosperma cuspidata* by Rafinesque, the fruit of which is said to be a dangerous poison, but in moderate doses to act as a powerful hydragogue.

181. M. operculata *Linn. sp.* 1433. *DC. prodr.* iii. 311. *Comm. rar.* 22. t. 22. — South America; common on the coast of Essequibo.

Leaves 5-lobed, toothed. Fruit elliptical, angular, tuberculated, with a deciduous rostrum-like lid, green, dry internally, and divided into 3 cells by a plexus of entangled fibres. Seeds compressed, black. — One of the bitterest of all known substances. *Hancock in Med. bot. trans.* 1829. p. 12.

MELOTHRIA.

Flowers monœcious. ♂. Calyx 5-toothed. Corolla campanulate; petals ciliated or toothed, not fringed. Filaments 5, triadelphous. ♀. Style 1. Stigmas 3, fringed. Fruit 3-celled, many-seeded.

182. M. pendula *Linn. sp. pl.* 49. *Lam. illustr.* t. 28. f. 3. *DC. prodr.* iii. 313. — South America.

Leaves cordate, 5-lobed, toothed. Tendrils simple. Female flowers solitary, on long stalks. Corolla somewhat hairy, toothletted. Fruits small, ovate, roundish, pendulous.— Extremely drastic. Four ripe fruits will purge a horse. *N. and E.*

TRICHOSANTHES.

Flowers monœcious, white. ♂. Calyx somewhat clavate, 5-parted: lobes setaceous, appendiculate, with 5 exterior teeth alternating with the lobes. Corolla 5-parted, ciliated. Stamens 3; anthers combined, their cells very wavy. ♀. Calyx 5-toothed. Corolla 5-parted, with a lacerated fringed margin. Style 3-fid; stigmas oblong, subulate. Fruit oblong, 3–9-celled.

183. T. palmata *Roxb. fl. ind.* iii. 704. — Forests of India.

Stem angular, very long, running over the highest trees, covered with gray scabrous somewhat corky bark; the young green parts smooth. Tendrils 3-cleft. Leaves petioled, generally palmate, though sometimes only from 3- to 5-lobed; divisions acute, slightly serrate, from 3- to 5-nerved, smooth, having frequently several round, glandular, hollow spots on the under side. Petioles channelled. Stipules single, small, axillary. Male flowers racemed, large, white, most beautifully fringed with long, white, ramous filaments. Racemes axillary, longer than the leaves. Bracts solitary, 1-flowered, oval, fringed, covered on the outside with dark green glandular spots. Female flowers generally axillary, peduncled, though sometimes racemose also. Fruit globular, smooth, of the size of a small orange, when ripe of a bright deep red, replete with a dirty looking, dark greenish, soft pulp, in which the seeds nestle. — Fruit reckoned poisonous. *Roxb.* Pounded small and intimately blended with warm cocoa nut oil, it is considered a valuable application in India for cleansing and healing the offensive sores that sometimes form inside the ears. It is also supposed to be a useful remedy poured up the nostrils, in cases of ozæna. *Ainslie.*

184. T. amara *Linn. sp. pl.* 1432. *DC. prodr.* iii. 315. — *Plumier descr. pl. amer.* t. 100. — St. Domingo.

Stem taper, smooth. Tendrils simple. Leaves cordate, somewhat triangular, sinuated, rough with dots, stalked. Female flowers solitary, with peduncles longer than the leaves. Calyx long, tubular, with lanceolate acute segments. Petals ovate, roundish, fringed. Fruit obovate-oblong, 9-celled, green, with longitudinal white lines; flesh white, bitter. — Seeds bitter and astringent; sometimes emetic. *Martius.*

185. T. villosa *Blum bijdr.* 934. *DC. prodr.* iii. 314. — Java.

Leaves cordate, tricuspidate, obsoletely toothletted, villous. Peduncles 1-flowered. Gourds roundish, with white streaks. — Fruit acts like Colocynth. *N. and E.*

186. T. cordata *Roxb. fl. ind.* iii. 703. — Boomee-Koomura of the Hindoos near the mouth of the river Megna, where the plant grows wild.

Root tuberous, perennial, growing to the size of a man's head. Stems herbaceous, climbing to the length of some fathoms, 5-sided, villous, or even somewhat scabrous when old. Tendrils opposite, 3-cleft. Leaves alternate, petioled, cordate and cordate-lobate, finely dentate, villous on both sides, about 6 inches each way. Petioles channelled, a little hairy, scarcely half the length of the leaves. Male raceme, axillary, solitary, as long as the leaves. Bracts alternate, sessile, cuneate, oblong, acute, serrulate, 1-flowered. Flowers large, white, the fringe of the segments coarser than in the other species. Female flowers axillary, solitary, short-peduncled. Gourd spherical, of the size of an orange, and of nearly the same colour, only redder, and, as in T. palmata, which it is much like, the cells and partitions are very obscure. Seeds numerous, immersed in soft, gelatinous, green pulp. — Root used by the natives of India as a substitute for Calumba root.

187. T. cucumerina *Linn. sp. pl.* 1432. *Blum Bijdr.* 934. *Roxb. fl. ind.* iii. 702. *DC. prodr.* iii. 315. — Pada valam *Rheede.* viii. t. 15. — Hedges in Bengal.

Stem 5-sided, slightly downy. Tendrils 3-cleft. Leaves broad-cordate, angular, and sometimes lobed, toothed, downy, very various in size. Male flowers racemose, small, white, beautifully fringed. Racemes axillary, erect, longer than the leaves, many-flowered. Female flowers axillary, solitary, short-peduncled, like the male ones. Fruit oval, or oblong, pointed, from 1 to 4 inches long, and from 1 inch to $1\frac{1}{2}$ inch in diameter, till ripe striated with white and green, when ripe red. Seeds involved in a red pulp, lobed. — The fruit is reckoned in India an anthelmintic.

MURICIA.

Monœcious. Sepals 5, enclosed in an ample undivided 1-flowered spatha, subulate, striated, coloured, united at the base. Corolla campanulate; petals 5, ovate lanceolate, ribbed. Stamens 5, triadelphous and syngenesious. Style 1; stigmas 3, sagittate, horizontal. Berry muricated, 1-celled, many-seeded. Seeds orbicular, large, reticulated, warted at the edge.

188. M. cochinchinensis *Lour. fl. coch.* 596. *DC. prodr.* iii. 318. — China and Cochinchina.

A large shrub. Stem thick, woody, climbing, with solitary tendrils. Leaves 5-lobed, toothed, smooth, stalked; the 3 upper lobes acuminate, the 2 lower rather blunt and short. Flower lateral, solitary, pale yellow, on a long stalk. Berry large, reddish purple both inside and outside, scentless, insipid. — Seeds and leaves abstergent and aperient; employed by the Chinese in obstructions of the liver, tumours, and malignant ulcers. Externally employed in fractures and dislocations &c.

*** Von Martius states in his *Travels in Brazil*, Eng. ed. ii. 101. that the seeds of a climbing plant, with large berries, perhaps akin to Feuillæa, which are known by the name of Castanhos do Sobotà, are given pounded, in doses of 2 or 3 drachms, in dyspepsy, and weakness of the organs of digestion.

BRASSICACEÆ, or CRUCIFERÆ.

Nat. syst. ed. 2. p. 58.

COCHLEARIA.

Calyx spreading, equal at the base; sepals concave. Petals obovate, obtuse. Stamens not toothed. Silicle globose ovate or oblong; dissepiment thin; valves ventricose thickish; cells seldom 2-seeded, usually many-seeded. Style very short. Seeds not bordered. Cotyledons flat, accumbent. (O=)

189. C. officinalis *Linn. sp. pl.* 903. *Eng. Bot.* t. 551. *Woodv.* i. t. 29. *DC. prodr.* i. 173. — C. renifolia *Stokes bot. mat. med.* iii. 435. — Sea coast of the north of Europe; also in mountainous wet situations. (Scurvy grass.)

Herbage smooth, bright green, many-stemmed, branched. Radical leaves petiolate, broadly ovate, bluntly cordate at base, somewhat toothed; cauline ovate, sessile, amplexicaul, coarsely toothed, almost incised. Racemes terminal. Pedicels 4–5 lines long. Silicles ovate, globose, 2–3 lines long, twice as short as their pedicels, with a broad ovate partition. — Once in great repute as an antiscorbutic. It is stimulant and diuretic if eaten fresh, but becomes inert when dried.

190. C. Armoracia *Linn. sp. pl.* 904. *Woodv.* iii. t. 150. *Eng. Bot.* t. 2223. *DC. prodr.* i. 173. *S. and C.* ii. t. 114. — Ραφανις αγρια *Dioscorid.* — Watery, somewhat mountainous parts of Europe. (Horseradish.)

Root white, taper, thick, long, very tenacious of life, acrid. Stems erect, about 2 feet high, branched at the top; those branches which flower corymbose, smooth, angular. Radical leaves stalked, very large, oblong, crenated, veiny; cauline sessile, smaller, the lower pinnatifid, pectinate, with entire or somewhat toothed obtuse lobes, the upper long lanceolate, toothed, or entire. Flowers white. Calyx spreading. Silicles elliptical, usually abortive. — The root is stimulant, diaphoretic, and diuretic, and externally rubefacient. It is used in paralysis, rheumatism, dropsy, and some cutaneous affections. A syrup made with a concentrated infusion of it, removes hoarseness arising from relaxation. *Thomson.* Steeped in cold milk it is said to form one of the best cosmetics *Burnett.*

CARDAMINE.

Calyx closed or somewhat spreading, equal at the base. Petals unguiculate, entire. Stamens distinct, not toothed. Pod sessile, linear, compressed, with flat nerveless valves rather narrower than the thickened dissepiment, and often separating with elasticity; style short or 0; stigma nearly simple. Seeds ovate, in 1 row, not bordered. Umbilical cords slender. (O=)

191. C. pratensis *Linn. sp. pl.* 915. *Eng. Bot.* t. 776. *Woodv.* t. 30. *Smith Eng. Fl.* iii. 189. *DC. syst.* ii. 256. — Common in meadows, on damp commons, and by the side of water.

Root tuberous, somewhat toothed. Herbage bright shining green, hairless or nearly so. Stem about a foot high. Radical leaves pinnated, on long stalks; leaflets in one or more pairs, rounded, wavy, cordate, angular or toothed, the terminal one much the largest; leaves of the stem with much narrower and more numerous subdivisions which are usually linear and entire. Flowers pale lilac or almost white, rather large, corymbose. Petals toothed on their unguis. — Said to be stimulant, diaphoretic and diuretic. The dried flowers have been a popular remedy for epilepsy in children.

SINAPIS.

Calyx equal at base, spreading. Petals obovate. Stamens distinct, entire. Silique tapering, 2-celled, 2-valved; cells many-seeded; valves concave, or keeled with a central nerve; style either short and acute, or rostrate subulate conical or ensiform, seedless or 1-seeded. Seeds 1-rowed, globose. (O>>)

192. S. nigra *Linn. sp. pl.* 933. *Eng. Bot.* t. 969. *Woodv.* iii. t. 151. *DC. prodr.* i. 21. *Smith Eng. Fl.* iii. 222. — Ναπυ *Hippocrat.* — Fields and banks all over Europe. (Common Mustard.)

An annual about 2 feet high, rough with hispid hairs. Lower leaves large, lyrate, rough, lobed, toothed; the upper narrower, stalked and smooth. Calyx yellowish, spreading. Petals yellow, obovate. Pods small, bluntly quadrangular, nearly even and smooth, pressed close to the peduncle; tipped by a small short style, but wholly destitute of the long sword-like beak of other species. Seeds blackish brown, veined, round. — Seeds acrid, stimulating, and bitter. The oil is purgative, and has been proposed as a rubefacient in paralysis, and as a vesicant. The distilled water has been used against the itch. The flour forms an useful local irritant in the form of a poultice.

193. S. chinensis *Linn. mant.* 95. *DC. prodr.* i. 219. — China.

Stem erect, furrowed. Lower leaves stalked, smooth, or hispid on the ribs underneath, slashed, pinnatifid; the lower lobes deeper, shorter, obtuse; the upper more deeply pinnatifid, less stalked, with acuminate entire, or somewhat toothed lobes. Racemes erect. Pedicels filiform, 6 lines long, erect. Young siliques smooth, pointed with the style. — Seeds considered by Mahometan and Hindoo practitioners stimulant, stomachic and laxative.

194. S. alba *Linn. sp. pl.* 933. *Fl. lond.* t. 46. *Eng. bot.* t. 1677. *DC. prodr.* i. 220. *S. and C.* i. t. 42. — Hedges and fields in most parts of Europe. (White Mustard.)

Stem smooth or but little hairy. Leaves almost always smooth, lyrate, pinnatifid; the lower lobes oblong and deeper, the terminal larger, all either acute or obtusely sinuate-toothed, or acutely toothed. Flowers yellow. Silique with a horn which is compressed, ensiform,

3-nerved, smooth or somewhat hispid, occasionally 1-seeded at the base, ovate-oblong, knotted, hispid, 2–4-seeded on each side. Seeds large, pale. — Seeds powerfully acrid and pungent; employed in the state of flour in the composition of common table mustard; used in their entire state as stimulating cathartics. Ulceration of the intestines has however been produced by the use of them, when they have lodged in the vermiform appendix of the cœcum.

ERUCA.

Calyx erect. Petals obovate. Stamens distinct, not toothed. Silique oval oblong, 2-celled, 2-valved; valves concave, smooth, with an ensiform seedless beak, scarcely shorter than the valves. Seeds globose. (O > >).

195. E. sativa *Linn. sp. pl.* 932. *Fl. græc.* t. 646 and 647. *DC. prodr.* i. 223. — Eruca herba *Pliny.* Ευζωμον *Dioscorid.* — Fields and waste places in the south of Europe. (Garden Rocket.)

Leaves lyrate, pinnatifid, with toothed acute lobes. Stem hirsute. Pedicels shorter than the deciduous calyx. Petals white, or pale yellow, with very dark veins, retuse, or somewhat emarginate. — The yellowish brown seeds may be substituted for mustard, but are less pungent.

RAPHANUS.

Calyx erect, somewhat 2-bagged at the base. Petals unguiculate, obovate or obcordate. Stamens without teeth, distinct. Silicle taper, pointed by a conical style, valveless, coriaceous, or corky, 2-celled, or 1-celled in consequence of the partition disappearing, either continuous or strangulated. Seeds 1-rowed, globose, pendulous. (O > >)

196. R. sativus *Linn. sp. pl.* 935. *Lam. illustr.* t. 566. *DC. prodr.* i. 228. — Ραφανις *Dioscorid.* Rhaphanus *Pliny.* — China, Japan, and the west of Asia. (Radish).

A common and very variable plant in gardens; the roots long or round, tender or hard and tough, red, purple, white or blackish gray, delicate or pungent. Leaves more or less hispid, lyrate, angular, rather fleshy. Flowers pale lilac. Siliques taper, torose, acuminate, scarcely longer than the pedicel. — Seeds are mentioned by Von Martius as emetic. The roots are said to be diuretic and laxative; the expressed juice is sometimes used on the Continent.

CAPPARIDACEÆ.

Nat. syst. ed. 2. *p.* 61.

CAPPARIS.

Calyx 4-parted. Petals 4. Torus small. Stipes of the ovary slender. Stamens numerous. Fruit siliquose, somewhat baccate, stipitate.

197. C. spinosa *Linn. sp. pl.* 720. *Blackw. herb.* t. 417. — Rocks walls and cliffs in the most southern parts of Europe; and in the Levant. (Caper.)

Stem half shrubby, trailing, purple, smooth. Leaves ovate, often emarginate, flat, quite smooth, with a short stalk. Stipules straight, spiny. Flowers solitary, axillary, with slender peduncles much longer than the petioles. Sepals 4, spreading, oblong, obtuse, concave, imbricated. Petals 4, large, white, emarginate, downy at the base, 2 adhering to each other more than the others. Stamens numerous, hypogynous, with long filiform filaments. Ovary oblong, deep rich crimson, on the apex of a slender stipe as long as the stamens, having a white ovate gland at its base; 1-celled, with 7–8 projecting placentæ, almost touching in the middle, and covered by numerous ovules. Stigma round, sessile, concave, entire. Fruit oblong, knotty, filled with firm pulp in which the seeds lie in as many rows as there were previously placentæ. Seeds reniform, smooth; embryo reniform, white, destitute of albumen, with two obovate plano-convex cotyledons. — The young flower buds are the capers of the shops; they are esteemed antiscorbutic, stimulant, and aperient; the bark of the root passes for a diuretic.

198. C. pulcherrima *Jacq. amer.* t. 106. *DC. prodr.* i. 250. — C. arborescens *Mill. dict.* No. 3. — Carthagena.

Leaves smooth, oblong, obtuse, with very short stalks, destitute of glands in the axils. Raceme terminal, simple. Sepals somewhat linear, acute, reflexed, distant at the base. Petals cream coloured, downy, oblong. Fruit roundish, somewhat pointed by the style. — A poisonous fruit, called *Fruta de Burro* near Carthagena, is supposed to belong to this or an allied species.

199. C. cynophallophora *Linn. sp.* 721. An infusion of the acrid root has been recommended as a specific in dropsy.

POLANISIA.

Sepals 4, spreading. Petals 4. Stamens 8–32. Torus small. Silique sessile within the calyx, or hardly stipitate, terminated by a distinct style.

200. P. icosandra *Wight and Arn. prodr. fl. ind. or.* i. 22. — P. viscosa *β. DC. prodr.* i. 242. Cleome icosandra *and* dodecandra *Linn. sp. pl.* 939. C. viscosa *Linn. sp.* 938. *Burm.*

fl. zeylan. t. 99. — Among rubbish and by the sides of walls in the East Indies.

Stem covered with viscid glandular hairs. Leaves 3–5-foliolate; leaflets obovate cuneate or oblong, pubescent, scarcely longer than the petiole. Stamens about 20. Silique terete, striated, rough with glandular hairs, sessile, acuminated. *W. and A.* — Used in Cochin China as a counter-irritant, in the same same way as sinapisms in Europe, and as a vesicant. The root is used as a vermifuge in the United States.

CRATÆVA.

Sepals 4. Petals 4, unguiculate, larger than the calyx; not closing over the stamens during æstivation. Stamens 8–28. Torus elongated or hemispherical. Berry stalked, between ovate and globose, pulpy within; pericarp thin. *W. and A.*

201. C. gynandra *Linn. sp. pl.* 636. *DC. prodr.* i. 243. — Thickets in Jamaica. (Garlick Pear.)

Leaves trifoliolate; leaflets ovate, acute. Stamens 20–24, longer than the petals, inserted upon a cylindrical torus. Berry ovate. — Bark of the root said to blister like cantharides.

202. C. Tapia *Linn. sp. pl.* 637. *DC. prodr.* i. 243. *Macfady. fl. jam.* i. 37. — (*Piso* t. 69. *Comm. hort.* i. t. 67.) — West Indies.

A tree about 20 feet high. Leaves trifoliolate; leaflets broad, ovate, acuminate. Raceme terminal, corymbose when young. Flowers on long stalks, purplish. Sepals spreading, deciduous. Petals about 1 inch long, rounded at the apex. Stamens 8–16, declinate, about 3 times as long as the petals. Stipe of the ovary as long as the stamens; stigma sessile, capitate. Fruit globose, size of a small orange. — Bark bitter and tonic, and has been used in the cure of intermittent fevers. *Burnett.*

VIOLACEÆ.

Nat. syst. ed. 2. p. 63.

VIOLA.

Sepals 5, unequal, prolonged into appendages at the base. Corolla unequal, 2-lipped, of 5 petals, the lower calcarate. Stamens 5, hypogynous, syngenesious, unequal; the 2 anterior having anthers that are often calcarate. Capsule bursting with elasticity, many-seeded, 3-valved. — Herbaceous plants.

203. V. odorata *Linn. sp. pl.* 1324. *Eng. Bot.* t. 619. *DC. prodr.* i. 296. *S. and C.* i. t. 29. — Common in groves and shady places all over the North of Europe and Asia, as far as Japan.

Runners flagelliform. Leaves roundish cordate. Sepals ovate obtuse. Petals blue, or white, sweet scented; spur very blunt. Stigma hooked, naked. Capsules turgid, hairy. Seeds turbinate, pallid. — Petals used as a laxative for children, one drachm of which operates pretty freely; the seeds possess similar properties; the root is emetic and purgative. The aqueous tincture of the flowers is a useful chemical test: uncombined acids changing the blue to red and alkalis to green. The Romans had a wine made of violet flowers, and it is said they are still used in the preparations of the Grand Signior's sherbet. By some the flowers are considered anodyne; they certainly produce faintness and giddiness in some constitutions as I have witnessed. Triller mentions a case in which they produced apoplexy. *Pereira.*

204. V. canina *Linn. sp. pl.* 1324. *Eng. Bot.* t. 620. *DC. prodr.* i. 298. — Woods, thickets and hedges all over Europe, Japan, Persia, west coast of America and in the Canaries.

Stem ascending, branched, smooth. Leaves cordate. Stipules acuminate, pectinate, finely lacerated. Peduncles smooth. Sepals subulate. Stigma papillose, somewhat reflexed. Capsule lengthened, with acuminate valves; seeds pyriform, brown. — Considered a depurative, and recommended for the removal of cutaneous affections. Root emetic.

205. V. tricolor *Linn. sp. pl.* 1326. *Fl. dan.* t. 623. *Eng. Bot.* t. 1287. *DC. prodr.* i. 303. — Fields all over Europe. Northern Asia and North America. (Heartsease or Pansy.)

Root somewhat fusiform. Stems branched, diffuse. Lower leaves ovate-cordate; stipules runcinate, pinnatifid, with the middle lobe crenated. Petals on short stalks; spur thick, obtuse, not projecting. Seeds oblong ovate. — When bruised the leaves smell like peach kernels, hence they have been supposed to contain prussic acid. They were once esteemed efficacious in the cure of cutaneous disorders, and are still employed in Italy in tinea capitis.

IONIDIUM.

Sepals 5, not prolonged at the base. Corolla unequal, 2-lipped, consisting of 5 petals, the lowest of which is very large and unguiculate. Stamens 5, hypogynous, unequal, the 2 anterior having anthers that are often appendiculate. Capsule protected by the permanent sepals, petals and stamens, few or many-seeded. — Herbaceous plants or shrubs.

206. I. Ipecacuanha *Aug. de St. H. plant. us.* No. 11. *pl. remarq. Brés.* p. 307. *Bot. Mag.* t. 2453. *Mart. sp. mat. med. bras.* p. 14. — Viola Itoubu *Aubl. guian.* ii. 808. t. 318. Ionidium Itubu *HBK. n. g. and sp.* v. t. 496. Pombalia Itubu *DC. prodr.* i. 307. — Woods of Brazil. (Poaya branca; Poaya da Praja.)

Leaves alternate, lanceolate-ovate, serrated, acute at each end. Stipules ovate-lanceolate, acute, membranous, ribbed in the middle. Sepals semipinnatifid. Lower petal very large, transversely elliptical. — The roots emetic; collected as a substitute for true Ipecacuanha. They are figured in *Mart. spec. mat. med. bras.* t. 8. f. 15. and 16.

207. I. Poaya *Aug. de St. H. pl. us.* No. 9. *plant. rém. Brés.* p. 308. — Fields in the western parts of Minas Geraes and elsewhere in Brazil. (Poaya do campo.)

Very shaggy. Stem suffruticose, usually simple. Leaves alternate, subsessile, ovate, somewhat cordate at base, rather acute, obsoletely toothed; stipules linear, scarious, quite entire, hardly perceptible. Lower petal very large, broadly obcordate. Filaments bearded on the outside at the apex. Membranous process of the anthers very small. — Roots emetic, substituted for true Ipecacuanha in Brazil, in the province of the Mines. *A. de St. H.*

208. I. microphyllum *HBK. nov. gen.* v. 374. t. 495. *DC. prodr.* i. 310. — Cuichunchulli *Bancroft in comp. to Bot. mag.* i. 278. — Quito near the foot of Chimborazo.

Stems somewhat quadrangular, smooth on the angles, downy on the sides, filiform, erect, apparently not above 1 foot high, if so much. Leaves all opposite, ovate, wedge-shaped and entire at the base, with 2 or 3 coarse serratures on each side towards the point, covered sparingly on each side with short fine down. Stipules membranous, linear-ovate, acuminate, longer than the very short petioles. Flowers small, axillary, solitary, erect. Peduncles filiform, slightly downy, twice as long as the leaves. Sepals ovate, acute, with a little fine down along the middle of the back. Lip panduriform, that is, unguiculate, roundish, emarginate, with the claw almost rhomboidal, from the projection of its sides at opposite points. — Stated to be a specific in Elephantiasis tuberculata, the ‘ Mal de San Lazaro” of the Spanish Americans, and “ Cocobay” of Jamaica. Dr. Bancroft, as quoted above, speaks most favourably of its effects in this miserable disease. Sir W. Hooker considered the specimens of the plant sent home by Dr. Bancroft to be identical with I. parviflorum *Vent.*; what I describe from samples given me by the Hon. W. F. Strangways under the name of “ Cuchunchully de Cuença” is obviously not that species, but I think the same as Humboldt’s I. microphyllum,

gathered among rocks at Lactacunga in Quito. This latter species has the leaves all opposite, and the pedicels much longer than the leaves, in both which circumstances it differs from I. parviflorum.

Along with this Cuchunchully Mr. Strangways received another sample called Cuchunchully colorado, which consisted of a very small quantity of the first, mixed with some Cinchonaceous plant, not in flower, but very like Mitchella repens, and forming the principal part of the parcel. Independently of their Botanical distinctions the infusions of these plants were extremely different; that of the first being a pale bright amber colour, of the latter a cloudy dull green. Samples of both these are deposited in the Materia Medica Museums of University College and King's College London, and were sent to the Medico-Botanical Society.

These Ionidia deserve to be attentively studied with reference to their medicinal properties. In addition to the foregoing the following have been mentioned as furnishing active principles.

209. I. parviflorum *Vent. malm.* p. 27. Roots extremely similar to Ipecacuanha in appearance and properties. *Linn.*

210. Maytensillo *Feuill. fl. chil.* iii. p. 41. t. 28, referred by Sir W. Hooker to the last species, is considered one of the most sovereign purgatives of Chili.

211. I. brevicaule *Mart.* l. c. t. 8. f. 7. and t. 3; a Brazilian emetic. Powder of the bark of the root, rubbed up with sugar and milk, furnishes an agreeably sweet medicine.

212. I. urticæfolium *Id.* t. 4. and t. 9. f. 17. 18. An emetic of the same country.

SAUVAGESIEÆ.

SAUVAGESIA.

Calyx deeply 5-parted, permanent, closing over the fruit. Corolla in 3 sets; the *outer* petals 5, ovate or oblong, spreading, deciduous, the *intermediate* ones filiform, variable in number, the *interior* 5 opposite the outer, erect, converging into a tube, much smaller. Stamens 5, enclosed within the interior petals, with which they alternate; filaments very short. Style subulate; stigma simple, inconspicuous. Capsule enclosed in the permanent floral organs, more or less deeply 3-valved, many-seeded. Seeds scrobiculate. — Small under shrubs or herbaceous plants. Leaves simple, with simply pinnated veins. Stipules ciliated.

213. S. erecta *Linn. sp. pl.* 294. *Jacq. amer.* 77. t. 51. f. 3. *Aug. de St. H. plant. rem. Brés.* 63. t. 3. a. — S. erecta, Adima, nutans, peruviana, geminiflora *of authors.* — Tropical parts of

South America, very general. (Yerba de St. Martin, *Peruv.* Adima, Yaoba *Cayenne.*)

Stems suffruticose, often branched, procumbent or erect. Leaves lanceolate, acute at each end, serrulated. Flowers axillary, solitary, twin or tern, usually nodding. Sepals ovate-oblong, acute, rather longer than the corolla. Filiform petals very numerous. — Very mucilaginous. It has been used in Brazil for complaints in the eyes, in Peru for disorders of the bowels, and in the West Indies as a diuretic, or rather in cases of a slight inflammation of the bladder.

SAMYDACEÆ.

Nat. syst. ed. 2. *p.* 64.

CASEARIA.

Calyx permanent, 4–6-lobed, imbricated. Petals 0. A disk lining the base of the calyx. Stamens 16–30, sub-monadelphous, perigynous, half antheriferous, half sterile and scale-like. Ovary with 3 parietal placentæ, tapering into a simple style, with a 3-lobed stigma. Capsule between leathery and fleshy, 3-valved. Seeds surrounded by a lacerated aril. — Leaves alternate, stipulate. Flowers axillary, clustered, corymbose, or solitary. Flowers whitish green, rarely pink.

214. C. ulmifolia *DC. prodr.* ii. 49. *Aug. de St. H. fl. bras. merid.* ii. 233. — Brazil, in the province of Minas Geraes. (Marmeleiro do Mato.)

Twigs nearly smooth. Leaves oblong, acuminate, finely serrate, rather downy. Flowers in short-stalked umbels, somewhat downy. Fertile stamens 10, rather shorter than the calyx. Styles undivided.— Believed by the Brazilians to be a valuable remedy against the bite of serpents; the leaves are applied to the wound, and an infusion of them is also taken internally.

215. C. Lingua *Aug. de St. H. fl. bras. merid.* ii. 236. — Brazil. (Cha de frade, Lingua de fin.)

Twigs downy. Leaves oblong-lanceolate, rounded at the base, acuminate, serrulate, smoothish. Flowers downy, in sessile umbels Fertile stamens 10, thrice as short as the calyx. Style trifid. — A decoction of the leaves administered internally in inflammatory complaints and malignant fevers.

MORINGACEÆ.

Nat. syst. ed. 2. p. 65.

MORINGA.

216. M. aptera *Gærtn.* ii. 315. *DC. prodr.* ii. 478. *Decaisne in ann. sc. n. s.* iv. 203. t. 6. — M. zeylanica *Delile fl. eg.* Balanus myrepsica *Belon, obs.* 126. (ed. fr. 1553). — Sennaar in Upper Egypt; Palestine; cultivated at Cairo.

A tree resembling a willow. Petioles leafless, long, deflexed, graceful, with 3 pair of similar opposite petiolules, having smooth stipitate glands between the pairs; leaflets in very young plants obovate, or oblong, obtuse, glaucous. Fruit obtusely triangular, furrowed, torulose, rostrate. Seeds roundish, or somewhat 3-cornered, turbinate, wingless. — From the seed is obtained by pressure the *oil of Ben*, much used by perfumers as the basis of various scents, and by watchmakers, because it does not readily freeze. The seeds are acrid and have been employed in fevers and also as rubefacients.

217. The Mouringon of *Rheede* vi. f. 11 or Moringa pterygosperma, is commonly cultivated in India for the leaves, flowers, and tender seed vessels, which are eaten by the natives in their curries. The seeds do not appear to be pressed for oil. *Decaisne.*

PASSIFLORACEÆ.

Nat. syst. ed. 2. *p.* 67.

PASSIFLORA.

Flowers hermaphrodite. Calyx-tube very short. Corona composed of numerous filaments in several rows. Anthers reflexed. Berry stalked, usually pulpy, rarely somewhat membranaceous. *W. and A.*

218. P. quadrangularis *Linn. sp. pl.* 1356. *Jacq. pl. amer.* t. 143. *Bot. reg.* t. 14. — West Indies and tropical parts of America. (Granadilla.)

Leaves smooth, cordate ovate, acuminate. Petioles with 4–6 glands. Stipules ovate. Bracts 3 under each flower, entire. Flowers large fleshy; crown erect, cylindrical, with numerous stout, lilac and white, variegated rays. Fruit very large, oblong, fleshy. — Root emetic. *Martius.* Powerfully narcotic, on which account it is said by Mr. Burnett, on the authority of a French writer, to be cultivated in several French settlements for the sake of its root. It is said to owe its activity to a peculiar principle called Passiflorine. The fruit, called Granadilla, is a common article in a Brazilian dessert.

219. P. Contrajerva *Smith in Rees* No. 23. — (*Hernand.* p. 301. *fig. inf.* — Mexico.

Leaves smooth, deeply 2-lobed; lobes oblong, obtuse, scarcely diverging. Flowers multifid. — Said to be alexipharmic and carminative.

220. P. fœtida *Linn. sp. pl.* 1359. *Cav. diss.* x. t. 289. *Bot. Reg.* iv. t. 321. *DC. prodr.* iii. 331. — Common in the West Indies.

From 4 to 7 feet high, herbaceous, densely furred with upright hair. Leaves distant, soft, yellowish green, 3-lobed, cordately hastate, about 3 inches long, repandly subdentate, the teeth headed by a small bristle or point, 5-nerved, shining through the pubescence at the under side; lobes acuminate; petioles glandless, thickish, roundish, nerved, nearly twice shorter than the blade; stipules broadly semisagittate, herbaceous, short, ciliately multifid. Flowers axillary, solitary, very tender, very fugacious, about 2 inches over; peduncles glandless, filiform, stiff, 3 times slenderer, but longer than the petioles, shorter than the leaf, spreading. Involucre herbaceous, larger than the flower, of 3 leaflets, yellowish green, very close to the calyx. Calyx rather tender, dinted at the base, very shallowly urceolate, greenish on the outside, white on the inside; segments oblong, obtuse, 3-nerved underneath, with the middle nerve carinately prominent, hairy, and terminating in a horn-shaped point. Petals very tender, all white, placed at the mouth of the tube of the calyx, equal to and of the same shape as the segments of that. Crown radiantly outspread, variegated with white and violet:

outer rays of 2 rows, longest, filiform, flexuose; inner ones placed at their base, very short, of several rows, subulate compact. Nectary slightly 2-chambered; outer wall springing from the foot of the shaft of the fructification, slightly coloured, deepish, quite entire, converging obliquely towards the short white denticulated operculum or cover. Shaft of the fructification yellowish green, dotted with purple. Styles whitish, wide-spreading, clavate; stigmas nearly globular, green, nutant. Germen ovate, green, quite smooth, but little larger than the stigmas. *Ker.* — Esteemed an emmenagogue, and is thought to be serviceable in hysteria; the infusion of the flowers is also taken as a pectoral medicine in the West Indies.

PAPAYACEÆ.

Nat. syst. ed. 2. *p.* 69.

CARICA.

221. C. Papaya *Linn. sp. pl.* 1466. *Bot. reg.* t. 459. *Bot. Mag.* tt. 2898, 2899. *Roxb. fl. ind.* iii. 824. *W. and A.* i. 352. —(*Rheed.* i. t. 15. t. 1 and 2. *Rumf.* i. t. 50.) — Tropical parts of America; cultivated commonly in India.

An upright unbranched tree, with the foliage large and confined to the top of the tree; every part yielding a slightly acrid and somewhat milky juice. Stem 20 feet high and more, cylindrical, or generally thickened towards the base, with a pale greyish, rather smooth, scarred bark. Leaves spreading, often a foot in length, stalked, heart-shaped in their circumscription, cut into 7 oblong, sinuated, or laciniate and almost pinnatifid, rarely entire lobes, acute at the points, the middle one the longest and the most divided, glabrous on both sides, dark green above, beneath much lighter, with prominent veins. Petiole 1 or 2 feet long, glabrous, cylindrical. Flowers (male), axillary, in slightly compound racemes or panicles, several inches long. Peduncles and pedicels terete, glabrous. Calyx very minute, a little concave, with 5 very small teeth. Corolla infundibuliform, 1–1½ inch long, yellowish white, thickish, subcoriaceous; tube cylindrical; limb cut into 5 imbricated oblong laciniæ. Stamens 10, inserted into the mouth of the tube, and all on the same line, 5 nearly sessile opposite the segments, the 5 others with evident filaments, which are white, hairy, thickened upwards: anthers of 2, linear-oblong, channelled cells. Abortive pistil small. Ovary oblong: style subulate: stigma none. Female flowers in short simple racemes, upon a different tree from the male, or occasionally on the same; and, indeed, according to Trew, the flowers are sometimes hermaphrodite. Calyx as in the male. Corolla much longer than in the male, of a yellower colour, cut nearly to the base into 5, oblong, moderately spreading segments, or, if we may trust the figures, pentapetalous. Ovary large, ovate, oblong, green: stigmas nearly sessile, of 5, radiate, cuneated and fimbriated, yellowish-green lobes. The corolla falls away, and the ovary, in coming to maturity becomes pendent: the tree, too, advancing in height, casts its lower leaves from beneath the flowers; and the fruit constituting a large oblong pepo, rests suspended upon the leafless part of the trunk, very much in the same way as that of the Artocarpus. The surface, when the fruit is ripe, is a pale and rather dingy orange yellow, obscurely furrowed, and often rough with little elevated points. The flesh is very thick, coloured, but paler than the outside; and there pass through it, longitudinally, 5 bundles of vessels. In the centre is a considerable cavity, with 5 longitudinal ridges; and these are thickly clothed with numerous seeds about as large as those of hemp, roundish, compressed, almost black, but covered with a transversely wrinkled, loose, greyish skin or aril, and enveloped in mucus. Albumen fleshy. Embryo

rather large, compressed. Radicle inferior. *Hooker.* — The milky juice a powerful vermifuge; the powder of the seeds has the same property. Fibrine is contained in the juice in such abundance that the latter bears a most extraordinary resemblance to animal matter. Water impregnated with the milky juice makes meat washed with it tender: the same effect is produced when meat is suspended among the branches of the tree; it first becomes tender and then passes into a state of putridity. Vauqelin says that a sample of the juice which he examined had the smell and taste of boiled beef. The leaves are used by negroes to wash linen instead of soap, and the fruit is eaten as a vegetable.

FLACOURTIACEÆ.

Nat. syst. ed. 2. p. 70.

CHAULMOOGRA.

Diœcious. ♂. Calyx 4–5-lobed. Petals 5, with a scale at the base of each. ♀. Calyx and corolla as in the male. Ovary superior, 1-celled, with numerous ovules upon 5 parietal placentæ; styles 5. Fruit succulent, dry, 1-celled, many-seeded.

222. C. odorata *Roxb. fl. ind.* iii. 836. — Silhet.

Trunk and large branches covered with tolerably smooth, ash-coloured bark; young shoots, round, smooth and green. Wood light brown, close-grained. Leaves short-stalked, alternate, bifarious, drooping, lanceolate, entire, acuminate, smooth, from 6 to 10 inches long, and from $1\frac{1}{2}$ to $2\frac{1}{2}$ broad; stipules none. Peduncles from the sides of the ligneous branchlets of from one to several years' growth, generally several together, from 1 to 2 inches long, 1-flowered. Bracts minute round the base of the peduncles. Male flowers $1\frac{1}{2}$ inch in diameter, when expanded, of a pale yellow, and powerfully fragrant. Calyx 1-leaved, bowl-shaped; border from 4 to 5 lobed. Petals 5, sessile-oblong, inserted into the receptacle round the filaments. Disk 5 ciliate, oblong scales, or smaller petals of a deeper yellow colour, over the lower half of the true petals, and attached to them. Filaments about 100, woody, inserted into the disk. Anthers linear, erect, about the length of the filaments, 2 together, rather shorter than the petals. Ovary none. Female on a distinct tree. Peduncles in bundles from tuberosities over the trunk, and larger branches, 1-flowered as in the male. Flowers larger than the male ones, and fragrant. Stamens none; but round the base of the ovary are inserted about 10 pinnatifid, villous bodies. Ovary superior, round, slightly 5-lobed, 1-celled, containing numerous ovules attached to 5 parietal receptacles. Styles 5, shorter; stigmas large, sagittate-cordate. Berry globular, of the size of a shaddock, 1-celled. Rind thick, rough, ash-coloured on the surface, internally brown, and composed of rays pointing to the centre of the berry. Seeds numerous, of the size of large filberts, immersed in pulp, various in shape, but in general nearly oval, smooth, light grey. Albumen conform to the seed, fleshy, of a whitish gray. Embryo white. Cotyledons sub-reniform. — Seeds employed extensively by the natives of India in the cure of cutaneous disorders. When freed from the integuments they are beaten up with clarified butter, into a soft mass, and in this state applied thrice a day to the parts affected. Chaulmoogra and Petarkura are the native names. *Roxb.*

223. Hydrocarpus venenata *Gœrtn.* i. 288. t. 60. f. 3, a Cingalese plant related to this order, bears a poisonous fruit, which when eaten, occasions giddiness and dangerous intoxication.

BIXACEÆ.

Nat. syst. ed. 2. *p.* 72.

BIXA.

Sepals 5, orbicular, tuberculate at the base, deciduous. Petals 5, obovate, entire. Stamens numerous, distinct: filaments filiform: anthers ovate. Style single, elongated, so compressed at the apex as to be almost ligulate. Capsule 2-valved, valves prickly on the outside, bearing a linear placenta internally along their middle. Seeds 8–10, attached to each placenta, surrounded by a farinaceous coloured pulp. Albumen fleshy. Trees with broad cordate leaves, and dichotomous panicles of large flowers. *W. and A.*

224. B. Orellana *Linn. sp.* 730. *DC. prodr.* i. 259. — Urucu *Sloane* ii. p. 52. t. 181. f. i. — The tropical parts of America, especially near springs and rivulets. (Arnotto.)

A small tree with a stem 10 or 12 feet high. Leaves cordate peltate, taper-pointed, smooth and shining, on long stalks. Flowers in terminal panicles, pale pink; petals oblong, fleshy; stamens very numerous, with roundish purple anthers. Fruit hard, bristly, heart-shaped, 2-valved, many-seeded. Seeds angular, covered with an orange red waxen pulp or pellicle. — The latter substance is the *arnotto* of the shops; it is separated from the seeds by washing. It is chiefly used for staining cheese, and in the preparation of chocolate; but was reckoned an antidote to the poison of the manioc or Janipha Manihot.

CLUSIACEÆ OR GUTTIFERÆ.

Nat. syst. ed. 2. p. 74.

HEBRADENDRON.

Flowers unisexual. ♂. Sepals 4, membranous, permanent. Petals 4. Stamens monadelphous, with a quadrangular column, anthers terminal, with an umbilicated circumscissile operculum. ♀. unknown. Berry many-(4) celled; cells 1-seeded; surrounded by a few abortive distinct stamens and crowned by a sessile lobed muricated stigma. Cotyledons thick, consolidated. Radicle central, filiform. *Graham.*

225. H. Cambogioides *Graham in Comp. to Bot. mag.* ii. 199. t. 27.—Cambogia gutta *Linn. zeyl.* 87. Mangostana Morella *Gærtn.* ii. 106. t. 105. Garcinia Morella *Desr. in Lam. encycl.* iii. 701. *DC. prodr.* i. 561. — Ceylon. ("Gokatu" or "Kana Goraka" *Cing.*)

A tree of moderate size. Leaves opposite, petiolate, obovato-elliptical, abruptly subacuminate, coriaceous, smooth, shining, dark-green above, paler below, veins in the recent state inconspicuous, especially above; in the dried state, distinct on both sides. Flowers unisexual, monœcious (or diœcious ?). Male small (8 to 9 lines across), clustered in the axils of the petioles, on short single-flowered peduncles. Sepals 4, subequal, imbricated, concave, membranous, veined, the outer subentire, and somewhat coriaceous in the bud, the inner sparingly denticulato-ciliate, yellow on the inside, yellowish-white on the outside. Petals 4, spathulato-elliptical, coriaceous, crenulate, longer than the calyx, yellowish-white, red on the inside near the base, deciduous. Stamens monadelphous; column 4-sided; anthers in a roundish capitulum, terminal upon a short clavate free portion of the filament, opening by the circumcision of a flat umbilicate lid; pollen yellow, granules elliptical. No trace of an ovary. Female flower unknown. Berry about the size of a cherry, round, with a firm reddish-brown external coat, and sweet pulp, 4-locular, surrounded at the base by the persisting calyx and a few free abortive stamens, crowned with the 4-lobed tubercled sessile stigma; loculament single-seeded. Seeds large in relation to the berry, reniform-elliptical, compressed laterally; integuments yellowish-brown, easily separable into two layers; cotyledons thick, cohering into an uniform cellular mass; radicle central, filiform, slightly curved. *Graham*, l. c. — This plant has now been proved to yield a kind of gamboge not distinguishable chemically or medicinally from that of Siam. But as no gamboge is imported from Ceylon there remains some doubt whether the Siamese and Cingalese plants are identical. Dr. Christison inclines to the opinion that they are, and that the notion of Murray is admissible who supposed that the tree yielding gamboge was carried from Siam to Ceylon along with the

Bhoodist religion, in which the sacred colour is the yellow produced by the Gamboge tree.

The idea that this valuable substance was produced by Stalagmitis Cambogioides, Garcinia Cambogia, and Xanthochymus pictorius, has been refuted by Drs. Graham and Christison, the latter of whom found the gambogioid exudations from the two last trees to be different from the real drug in texture, effects, colour, and chemical constitution. See *Companion to the Botanical Magazine*, vol. ii. pp. 193. and 233.

226. H. pictorium ? *Graham* l. c. p. 199. col. 1. — Garcinia pictoria *Roxb. fl. ind.* ii. 627. — Highest parts of Wynaad in India.

Tree tall, say 60 feet high, of a conical shape, and very full of branches. Bark pretty thick, scabrous and ramous on the outside, of a dark ferruginous colour, intermixed with many yellow specks, and through its substance, particularly on the inside, considerable masses of gamboge are found. Young shoots somewhat angular, smooth, polished, of a deep green. Leaves opposite, short-petioled, oblong-ventricose, rather acute, entire, smooth on both sides, and of a firm texture, from 3 to 4 inches long by 1½ or 2 broad. Hermaphrodite flowers axillary, over the axils of the former year, solitary, sessile, of a middling size, and yellow colour. Bracts some very short, obscure scales, round the insertion of the flowers. Calyx of two unequal pairs of concave, obtuse leaflets, permanent. Petals 4, oval, longer than the calyx. Filaments united into 4 bodies, which are again united at the base into a narrow ring, round the bottom of the young ovary; above each body is divided into from 2 to 6 single, unequal, short filaments. Anthers from 10 to 15, oblong, 2-lobed, and seemingly fertile. Ovary superior, round, 4-celled, with 1 ovule in each attached to the axis, a little above its middle. Style 0. Stigma 4-lobed, permanent. Berry size of a large cherry, oval, smooth, very slightly marked with 4 lobes, crowned with the sessile, 4-lobed, verrucose, permanent stigma. Rind leathery, pretty thick, and rather spongy, 1-celled. Seeds 4 when all ripen, oblong-reniform. Male flowers: calyx and corolla as in the female. Filaments numerous, inserted on the crown of a square fleshy receptacle, in the centre of the flower, clavate, angular. Anthers peltate. *Roxb.* — Roxburgh says he received frequent samples of the Gamboge of this tree from a correspondent at Tellicherry, and uniformly found it even in its crude unrefined state, superior in colour, while recent, to any other kind he had tried, but not so permanent as that from China. Dr. Christison was unable to procure this for examination.

STALAGMITIS.

Flowers polygamous or bisexual. Sepals 4–5, persistent, without bracteoles. Petals 5, alternate with the sepals. Stamens (in both male and female flowers) 4–5-adelphous; bundles flat, elongated and divided at the apex into several short anther-iferous portions, opposite to the petals, alternating with 5 large truncated glands: anthers 2-celled, bursting longitudinally. Ovarium (only in the bisexual flowers) 3–5-celled, with 1 ovule in each cell. Style scarcely any. Stigma 3–5-lobed. Fruit baccate, 3–5-celled. Seeds 1 in each cell, or fewer by abortion. Trees. *W. and A.*

227. Stalagmitis ovalifolia *Brown and Graham in Comp. to B. M.* ii. 197. col. 2. — Xanthochymus ovalifolius *Roxb. fl. ind.* ii. 632. *W. and A.* 102. — Southern provinces of India; Ceylon. *Wight.*

Leaves oval, shining. Flowers lateral, fascicled, male and hermaphrodite mixed. Anthers 6–8 to each bundle. Ovary 3-celled. Fruit oval, 1–3-seeded. — Dr. Wight persists in the opinion that this yields one kind of true Gamboge in Ceylon. See *Bot. Mag. comp.* vol. ii.

MAMMEA.

Sepals 2, deciduous, equal. Petals 4–6, coriaceous, somewhat equal, deciduous. Stamens distinct or slightly united at the base, indefinite, deciduous; filaments short; anthers adnate, 2-celled, opening longitudinally. Ovary 4-celled; ovule solitary, erect. Style short; stigma 4-lobed, with emarginate lobes. Fruit pointed by the remains of the style, with a hard putamen and fleshy rind, 4- or by abortion 2–3-celled. Seeds large, thick. — Trees having leaves containing pellucid dots. Flowers usually solitary.

228. M. americana *Linn. sp. pl.* 731. *DC. prodr.* i. 561. *Cambessed. mem.* p. 56. — *Sloane* ii. 123. t. 217. f. 3. — West India Islands. (Mammee *Eng.* Abricot-sauvage *Fr.*)

A tall tree. Leaves oval or obovate, entire, blunt, shining, leathery, opposite, short-stalked, 5–8 inches long. Flowers solitary, white, sweet, $1\frac{1}{2}$ inch in diameter. Fruit roundish, 3–7 inches in diameter; it is covered with a double rind, the outer leathery, 1 line thick, tough, brownish yellow, scored crosswise; the inner thin, yellow, adhering firmly to the flesh which is firm, bright yellow, with a pleasant singular taste and a sweet aromatic smell. Skin and seeds very bitter and resinous. — Bark abounds in a strong resinous gum, used by negroes for extracting chigoes from their feet. Melted down with a little lime juice and dropped into sores it is effectual in destroying maggots at the first dressing. A bath of the bark hardens the soles of the feet like Mangrove bark. *Lunan.*

CALOPHYLLUM.

Flowers often by abortion polygamous. Sepals 2–4, petaloid, deciduous. Petals 2–4, alternating with the sepals. Stamina usually numerous, or sometimes definite, more or less distinctly 4-adelphous at the base or distinct: filaments short: anthers dehiscing longitudinally. Ovary ovate, 1-celled: ovule solitary, attached to the bottom of the cell. Style longish, flexuose. Stigma large, peltate, irregularly lobed. Fruit drupaceous, 1-celled, 1-seeded. Trees with leaves furnished with numerous transverse parallel slender nerves. Flowers disposed in axillary racemes or panicles. *W. and A.*

229. C. Inophyllum *Linn. sp. pl.* 732. *DC. prodr.* i. 562. *W. and A.* i. 103. — (*Rheede.* iv. t. 38. *Rumf.* ii. t. 71.) — East Indies.

Branches terete. Leaves elliptical or obovate, obtuse or retuse. Racemes longer than the leaves, lax, from the axils of the upper leaves, or in a terminal panicle. Sepals and petals 4. Drupe spherical, large. *W. and A.* — Seeds yield an oil. Resin of the roots supposed by some authors to be the same as the Tacamahaca of the Isle of Bourbon.

230. C. Calaba *Linn. sp. pl.* 732. *Burm. ind.* 120. — C. apetalum *Willd.* C. spurium *Choisy W. and A.* i. 103. — *Rheede* iv. t. 39. *Burm. fl. zeyl.* t. 60. — Travancore.

Young branches square. Leaves cuneate obovate, obtuse or emarginate. Racemes lax, about as long as the leaves, axillary near the ends of the branches. Sepals and petals 2. Drupe oblong, small. *W. and A.* — Produces the true East India Tacamahaca.

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§ ? CANELLEÆ.

Nat. syst. ed. 2. *p.* 75.

CANELLA.

Sepals 5. Petals 5, somewhat coriaceous, glaucous twisted in æstivation. Stamens combined in a tube; anthers 15, resembling furrows. Stigmas 3. Berry 3-celled, or by abortion sometimes 1-celled; cells 1–2-seeded. Embryo surrounded by fleshy albumen, curved, with linear cotyledons.

231. C. alba *Murr. syst.* 443. *Browne Jam.* 215. t. 37. f. 3. *Swartz act. linn. lond.* i. 96. t. 8. *S. and C.* ii. t. 66. *Woodv.* t. 117. *N. and E.* iii. 327. *plant. med.* t. 418. — Winterana Canella *Linn. sp. pl.* 636. — Woods, mountains and rocky hills in the West Indies, and main land of America. (Wild Cinnamon.)

Tree from 40 to 50 feet high. Inner bark thick, smooth, pale, with a biting aromatic taste, something like cloves, dry and crumbling between the teeth. Leaves scattered, shining, yellowish green, obovate, cuneate at base, dotted when young, opaque when old. Flowers small, clustered, purple; petals concave, erect, thick, deciduous. Berry the size of a pea, fleshy, smooth, blue or black, hot and biting while green. Seeds generally 2. — All parts of the tree when fresh are hot aromatic and pungent. Bark yields by distillation a warm aromatic oil reckoned carminative and stomachic. It is often mixed with oil of cloves, in the West Indies. In this country it is principally employed as an aromatic addition either to tonics or purgatives in debilitated conditions of the digestive organs. Canella bark has also been employed in scurvy. *Pereira.*

HYPERICACEÆ.

Nat. syst. ed. 2. p. 77.

HYPERICUM.

Sepals 5, more or less connected at the base. Petals 5. Stamens usually very numerous, united at the base into 3–5 bundles, rarely somewhat distinct. Styles 3–5, distinct or rarely combined, persistent. Capsules unilocular, or with several cells, membranaceous, 3–5-valved, many-seeded. Seeds roundish; seed-coat double: albumen none: embryo with semicylindrical cotyledons. — Herbaceous or shrubby plants. Leaves opposite, or very rarely alternate, sessile or nearly so. Flowers either solitary, in threes, cymose, corymbosely panicled, or umbellate, usually yellow. *W. and A.*

232. H. perforatum *Linn. sp. pl.* 1105. *E. Bot.* t. 295. *Fl. Lond.* t. 57. *Woodv.* t. 10. *DC. prodr.* i. 549. — Common in groves and hedges in Europe.

Root woody, tufted, somewhat creeping. Stem tall, and bushy, in consequence of the length of its axillary leafy branches; its form round, with only 2 opposite ribs or angles. The whole herb dark green, with a powerful scent when rubbed, staining the fingers with dark purple, from the great abundance of coloured essential oil, lodged in the herbage and even in the petals. Leaves very numerous, elliptical or ovate, obtuse, various in width. Flowers bright yellow, dotted and streaked with black or dark purple, numerous, in dense, forked, terminal panicles. Sepals narrow. Styles short, erect. Capsules large, ovate. — Leaves astringent; an infusion has been used in gargles and lotions.

ANDROSÆMUM.

Sepals rather unequal, reflexed. Petals deciduous, reflexed. Stamens in 5 very short deciduous parcels. Ovary incompletely 3-celled, with distinct placentæ; ovules in many rows; styles 3, distinct; stigmas minute. Capsule baccate, indehiscent, becoming brittle and 3-partite; placentæ elliptical, somewnat membranous, stipitate.

233. A. officinale *All. ped. n.* 1440. *DC. prodr.* i. 543. — Hypericum Androsæmum *Linn. sp. pl.* 1102. *E. Bot.* t. 1225. *Fl. Lond.* t. 48. — Woods in Europe.

An undershrub. Branches quadrangular, somewhat compressed. Leaves ovate or cordate, sessile. Panicles terminal, forked, many-flowered, with angular smooth peduncles. Flowers 1 inch wide, yellow. Fruit

purplish black, fleshy. — The leaves once much esteemed as vulnerary, and still employed with great confidence in the cases of recent wounds by rustic nurses.

VISMIA.

Berry membranous. Styles 5; stigmas peltate. Stamens numerous in 5 parcels, alternating with 5 glands. Sepals 5. Petals 5, usually shaggy internally. — Shrubs or trees, with quadrangular branches. Leaves usually protected by rusty down, rarely with pellucid dots. Flowers in branched panicles. Leaf-buds round or oblong.

234. V. guianensis *Pers. synops.* ii. 86. *D C. prodr.* i. 542. — Hypericum guianense *Aubl.* ii. 784. t. 311. — Guiana.

A small tree, with a stem about 8 feet high. Stem quadrangular. Leaves ovate-lanceolate, acuminate, dilated at the base, rufous beneath, smooth above, filled with transparent dots. Petiole short. Calyx ovate, blunt, villous. Flowers corymbose, yellow. Berry yellowish, ovate, soft, somewhat 5-cornered. — Bark when wounded yields a gum resin, which when dry resembles Gamboge. The leaves and fruit equally yield such a secretion. It is purgative in doses of 7–8 grains. A decoction of the leaves taken internally is valued as a cure for intermittent fevers. *Aublet.*

Several other species of Vismia yield a similar secretion, which has found its way to Europe under the name of American Gamboge.

TERNSTROMIACEÆ.

Nat. syst. ed. 2. *p.* 79.

COCHLOSPERMUM.

Calyx of 5 oval, oblong, unequal sepals, at length reflexed; the two exterior smaller: bracteoles none. Petals 5, emarginate, unequal-sided: æstivation twisted. Stamens numerous: anthers linear-acuminated, attached by the base, opening by a pore at the apex. Ovary seated on an elevated disk. Styles united up to the apex into 1 long and filiform. Capsules shortly obovate, 3–5-celled, 3–5-valved: valves bearing incomplete dissepiments in the middle. Seeds numerous, somewhat reniform, covered with cotton: albumen fleshy: embryo slender. Trees or shrubs. Leaves lobed. Flowers large, yellow, panicled, with the peduncles jointed at the base. *W. and A.*

235. C. Gossypium *DC. prodr.* i. 527. *Wight in Hooker's Bot. misc.* ii. 357. t. 18. *W. and A.* i. 87. — Bombax Gossypium *Linn. syst. veg.* 517. *Cav. diss.* 5. t. 157. — Coromandel, Travancore, Ceylon, on low coast ground.

A large tree. Shoots downy. Leaves 5–6 inches long, 5-lobed, hoary beneath, on cylindrical downy stalks. Panicle terminal. Flowers large, bright yellow. — The trunk yields the gum Kuteera, which in the north-western provinces of India is substituted for Tragacanth. *Royle.*

236. C. insigne *Aug. de St. H. fl. bras.* i. 297. *pl. us.* No. 57 — Wittelsbachia insignis *Mart. nov. g. et sp.* i. 81. t. 55. Maximiliania regia *Mart. in bot. zeit.* 1819. p. 452. — Brazil in the plains on the western desert part of the province of Minas Geraes, and also in the Catingas of Minas Novas. (Butua do curvo.)

Leaves coriaceous, palmate, 5-lobed; the lobes folded together, coarsely and sharply double-serrated, when full grown nearly smooth. — A decoction of the roots employed in internal pains, especially such as are produced by falls or accidents; it is also asserted to heal abscesses already commenced.

THEA.

Calyx without bracts; the sepals imbricated, equal. Petals 5–9, unequal, the outer shorter. Stamens adhering to the very base of the petals, indefinite in number, smooth. Style simple at the base, trifid upwards. Capsule spheroidal, 3-celled, often by abortion 1–2-celled; cells opening at the apex, 1- or rarely 2-seeded. Seeds spheroidal, wingless.

237. T. viridis *Linn. sp. pl.* 735. *Lettsom. mon. ic.* — China. (Green tea.)

An evergreen shrub. Branches bright brown, smooth, green and downy when young. Leaves bright deep green, oval or oval-lanceolate, short-stalked, very convex, serrated, entire towards the base, and at the apex which is acuminate and emarginate; shining on both sides, and blistered when old, slightly downy beneath. Flowers small, white, axillary, solitary; with a rather heavy odour.

238. T. Bohea *Linn. sp. pl.* 743. *Bot. mag.* t. 998. *Lettsom. mon. ic.* — China. (Black Tea.)

Very much like the last; but the leaves are flatter, smaller, darker green, with small serratures, and terminating gradually in a point, not at all acuminate or emarginate.

SAPINDACEÆ.

Nat. syst. ed. 2. *p.* 81.

CARDIOSPERMUM.

Sepals 4, the two exterior the smallest. Petals 4, with a scale above their base. Two hypogynous glands. Stamens 8, unequal, excentric. Pistil also out of the centre. Ovary 3-celled, with a trifid style, and 1 ascending ovule in each cell. Fruit bladdery, septicidal, very thin. Seeds with a thick funiculus which often expands into a short aril.

239. C. Halicacabum *Linn. sp. pl.* 925. *DC. prodr.* i. 601. *Lam. ill.* t. 317. *W. and A.* i. 109. — *Rumf.* vi. t. 24. f. 2. *Rheede.* 8. t. 28. — East Indies.

Annual. Stem petioles and leaves nearly glabrous. Leaves biternate; leaflets oblong, much acuminated, coarsely cut and serrated. Glands of disk roundish. Fruit broadly pyriform. *W. and A.* — Root aperient.

SAPINDUS.

Calyx 4–5-partite. Petals as many as the sepals, rarely one of them abortive, naked or hairy, or with a scale above the claw. Torus a disk occupying the bottom of the calyx, entire or crenulated. Stamens 8–10, inserted between the margin of the disk and the ovary. Ovary 3-, rarely 2-celled: ovule 1, erect, at the base of each cell. Style crowned with a 3–, rarely 2-lobed stigma. Fruit externally fleshy, 1–2-lobed from abortion, rarely 3-lobed; lobes globular, indehiscent, 1-seeded. Seeds without an arillus. Embryo curved or straight. Trees. Leaves without stipules, usually abruptly pinnate, sometimes unequally pinnate, or from abortion having only 1 leaflet. Flowers racemose. Berries saponaceous. *W. and A.*

240. S. saponaria *Linn. sp. pl.* 526. *DC. prodr.* i. 607. *Commel. hort.* i. 94. — West Indies. (Soapberry.)

A small tree. Leaves pinnated; leaflets entire, lanceolate, in 3 or 4 pairs, the terminal ones with very taper points; petiole decurrent, winged. Flowers small, white, in terminal panicles. Fruit as large as a cherry, baccate, containing a single shining black seed. — Fruits detersive and very acrid; they lather freely in water and are used in the West Indies instead of soap; "a few of them will cleanse more linen than 60 times their weight of soap." Pounded and thrown into water they intoxicate fish. A tincture of the berries has been recommended in chlorosis.

241. S. inæqualis is said to have similar detersive qualities. (*Linnæa* vi. 419.)

PAULLINIA.

Sepals 5, or 4 in consequence of the cohesion of 2; the 2 external the smallest. Petals 4, with a scale inside, above their base. Hypogynous glands 2–4. Stamens 8, out of the centre. Ovary out of the centre, 3-celled, with a trifid style, and 1 ascending ovule in each cell. Capsule pyriform, 3-cornered, often with 3 short wings at the point, 3-celled, rarely 1–2-celled, 3-valved. Arillus 2-lobed.

242. P. australis *Aug. de St. H. pl. remarq.* p. 236. t. 24. B. *Fl. bras.* i. 375. — Brazil, on the banks of the River Uruguay.

Leaves unequally pinnated, in 3 pairs; the lower in 2 pairs; the intermediate trifoliolate; the upper simple; leaflets oblong, wedge-shaped, coarsely incised and serrate, smooth. Petiole naked; rachis winged. Capsule pyriform, very obtuse. — Supposed by M. Auguste de St. Hilaire to be the plant from which a species of Polistes prepares a venomous honey in the woods of Brazil. (See an account of this poison and its effects in the "*Plantes remarquables*," p. 192.

MAGONIA.

Flowers polygamous. ♂. Calyx 5-parted, unequal, reflexed. Petals 5, linear, unequal. Disk unequal, between the petals and stamens; on one side long and double, in the other short, simple and rugose. Stamens 8, declinate. ♀. As in the male, but stamens much smaller and not declinate. Ovary 3-celled, many-seeded; style curved; stigma 3-lobed. Capsule large, woody, 3-valved, loculicidal. Seeds large, flattened, surrounded with a wing. Hilum in the edge. — Trees with a corky bark. Leaves alternate, abruptly pinnate, without stipules. Flowers panicled.

243. M. pubescens *Aug. de St. H. pl. rem.* tt. 23 and 24 A. *Fl. bras.* i. 394.— Phæocarpus campestris *Mart. n. g. and sp. pl.* i. 62. tt. 37 and 38. — Common in the western deserts of the province of Minas Geraes in Brazil. (Pao de Tinguy.)

A small tree. Branches downy. Leaflets 8, ovate or oblong, sessile, deeply emarginate, downy. Flowers in a terminal sessile or stalked panicle from 9 to 16 inches long. Calyx downy, yellowish-green. Petals linear, obtuse, above in the middle smooth and dark purple, at the edges and point downy and green. Fruit a large, woody, globose, 3-cornered, somewhat depressed capsule, with 3 valves, 3 cells, and many seeds. — Ashes extremely alkaline. Bark used for subduing the swellings produced in the hides of horses by the stings of insects. Leaves lethal to fish.

SCHMIDELIA.

Sepals 4, unequal. Petals 4, either naked on the inside or usually furnished with a scale above the unguis, the fifth or superior one deficient. Disk incomplete, with 4 glands opposite

the petals. Stamens 8, connate round the ovary at its base. Ovary usually 2-, sometimes 3-lobed: style from between the lobes of the ovary; stigmas 3, recurved. Fruit indehiscent, 1-2- or rarely 3-lobed: lobes somewhat globose, fleshy or dry, 1-celled. Seeds with or without an arillus. — Trees or shrubs usually trifoliate, rarely with simple, exstipulate leaves. Flowers white, small, in axillary racemes.

244. S. serrata *DC. prodr.* i. 610. *W. and A.* i. 110. — Ornitrophe serrata *Roxb. corom.* i. t. 61. *fl. ind.* ii. 266. — Common on the coast of Coromandel and in Bengal.

Leaves ternate; leaflets ovate, pointed, serrate, generally blistered, with frequently reflected margins, smooth on the back, from 2 to 3 inches long, and about 1½ broad. Racemes axillary, single, erect. Flowers numerous, small, white, fascicled. Males and hermaphrodites mixed on the same tree, and sometimes on separate ones. Hermaphrodite: Calyx 4-leaved. Petals 4, unilateral. Hypogynous scales lacerated. Filaments very woolly near the base. Ovary superior, 2-lobed, with a single ascending ovule in each cell. Style single. Stigma 2-cleft. Berry succulent, generally single, the second lobe of the ovary being for the most part abortive, obovate, the size of a pea, smooth, bright red, 1-celled. — Root astringent; employed by the Telinga physicians in substance to stop diarrhœa. Ripe berries eaten by the natives of Coromandel.

SCHLEICHERA.

Calyx 5-toothed. Petals 0. Disk occupying the bottom of the calyx. Stamens 6–10, inserted between the margin of the disk and the ovary. Ovary 3-celled, with 1 erect ovule in each cell. Stigma 3-cleft. Fruit an indehiscent drupe, with 1–2 or rarely 3 cells. Seeds solitary in each cell, covered with a pulpy arillus. Embryo much curved. — Trees. Leaves exstipulate, abruptly pinnate: leaflets opposite or nearly so. Flowers small, disposed in spike-like racemes. *W. and A.*

245. S. trijuga *Willd. sp.* iv. 1096. *Roxb. fl. ind.* ii. 277. *W. and A.* i. 114. — Melicocca trijuga *Juss. in mem. mus.* iii. 187. t. 8. *DC. prodr.* i. 616. Stadmannia trijuga *Spr. syst.* ii. 243. Cussambium pubescens *Hamilt. in Wern. trans.* v. 357. — Various parts of insular and continental India.

Leaves about the extremities of the branchlets, abruptly pinnate, from 8 to 16 inches long; leaflets from 2 to 4 pair, opposite, sessile, broad-lanceolate or oblong, entire, pretty smooth on both sides; the lower pairs the smallest; from 3 to 8 inches long. Petioles a little downy, from 6 to 16 inches long. Stipules wanting. Racemes axillary, or below the leaves, round the base of the young shoots solitary; in the male simple; in the hermaphrodite often compound; from 2 to 4 inches long. Male. Calyx cup-like, 5-toothed. Corolla 0. Filaments from 6 to 10, erect, many times longer than the calyx. Anthers oval, erect. Pistil a mere rudiment. Hermaphrodite flowers on a separate tree. Calyx as in the male. Corolla 0. Disk a fleshy, yellow ring surround-

ing the insertions of the filaments. Stamens as in the male. Ovary superior, ovate, 3-celled, with one ascending ovule in each cell. Style short. Stigma 3-cleft, recurved, slender, downy. Drupe the size of a nutmeg, a little pointed, covered with a tender, dry, grey pericarp. Seeds 1, 2, or 3, oblong, smooth, at the base obliquely truncate, and there affixed, each surrounded with its proper, whitish, pulpy aril, which is of a pleasant acid taste, and most grateful during dry weather. — Bark astringent; rubbed up with oil the natives of India use it to cure the itch. The pulpy subacid aril is edible and palatable.

ÆSCULACEÆ.

Nat. syst. ed. 2. *p.* 84.

ÆSCULUS.

Calyx campanulate. Petals 4–5, expanded, with an ovate limb. Filaments curved inwards. Capsules prickly. — Leaflets sessile or nearly so.

246. Æ. Hippocastanum *Linn. sp. pl.* 488. *DC. prodr.* i. 597. *N. and E. handb.* iii. p. . *pl. med.* t. 375. *S. and C.* ii. t. 68. — North of India? Persia? More likely some of the north-eastern provinces of Turkey.

A middle sized round-headed tree. Leaves opposite, long-stalked, digitate; leaflets obovate-lanceolate, acuminate, rather thin and rugose, coarsely and irregularly serrated, increasing in size from the end to the centre. Calyx light green, campanulate, obtusely 5-toothed. Petals 5, white, oblong, unguiculate, fringed, wavy, with a small red spot above the claw. Filaments shorter than the petals, subulate; anthers reddish brown, oblong. Capsule roundish, prickly, thick and tough, 3-valved, 1–2–3-celled, containing 1–2–3 large, oblong, deep chesnut-brown seeds, with a large broad space forming a hilum. Embryo curved; radicle bent down towards the hilum upon the thick fleshy cotyledons which are wrinkled and firmly consolidated. — Bark recommended as a valuable febrifuge in intermittent and other fevers; it deserves to be the subject of a series of well-conducted experiments; a decoction has been recommended in gangrene; and its powder as an errhine.

POLYGALACEÆ.

Nat. syst. ed. 2. p. 84.

POLYGALA.

Sepals 5, persistent, the alæ large and petaloid. Petals 3; their claws all united with the staminiferous tube, the lower one (*carina*) keel-shaped, the two additional ones abortive. Stamens united into a tube at the base, which is cleft in front: anthers opening by a pore. Ovary 2-celled: ovules solitary, pendulous from the apex of the cell. Capsule 2-locular, loculicidal, compressed. Seeds pendulous from the apex of the cells, pubescent, with a carunculate arillus at the hilum: albumen abundant, fleshy. Shrubs or herbaceous plants. Flowers arranged in terminal or axillary racemes. *W. and A.*

247. P. Senega *Linn. sp. pl.* 990. *Woodville med. bot.* ii. t. 93. *Bot. Mag.* t. 1051. *Bigelow med. bot.* ii. t. 30. *N. and E. pl. med.* t. 412. *S. and C.* ii. t. 103. — Mountainous parts of the United States, where it is called "Seneca snake root."

Root perennial, firm, hard, branching, consisting of a moderately solid wood, and a thick bark; it sends up a number of annual stems, which are simple, smooth, occasionally tinged with red. Leaves alternate, nearly or quite sessile, lanceolate, with a sharpish point, smooth, paler underneath. Flowers white, in a close terminal spike. Sepals 5, the two largest, or wings, roundish-ovate, white, and slightly veined. Corolla small, closed, having 2 obtuse lateral segments, and a short-crested extremity. Capsule obcordate, invested by the persistent calyx, compressed, 2-celled, 2-valved. Seeds 2, oblong-obovate, acute at one end, slightly hairy, curved, blackish, with a longitudinal, bifid, white strophiola on the concave side. The spike opens slowly, so that the lower flowers are in fruit while the upper ones are in blossom. — Root unpleasant, somewhat acid and acrid. It acts as a sudorific and expectorant in small doses, and as an emetic and cathartic in large ones. Employed in pneumonia, asthma, croup, dropsy, chronic rheumatism, and especially in such uterine complaints as amenorrhæa. Dr. Archer has extravagantly praised it in Cynanche trachealis.

248. P. caracasana *HBK.* has a root with a taste similar to that of P. Senega, but not altogether equal to it. *Linnæa* v. 230.

249. P. uliginosa *Rchb. pl. crit.* i. t. 40. 41. *fl. excurs.* i. 350. *N. and E. pl. med.* t. 411. — P. amara *Bot. mag.* t. 2437. *not Jacq. according to Rchb.* — Moors and mountains in various parts of Germany.

Root slender, almost insipid. Lower leaves large, rosulate, obovate; upper cauline acute. Flowers numerous, blue or white. Lateral sepals cuneate, elliptical, about as long as the fringed corolla. Capsule obcordate, oblong, longer and broader than the sepals, distinctly narrowed to the base. *Rchb.* — Whole plant bitter. It is much extolled by Van Swieten and others in pulmonary complaints and spitting of blood.

250. P. rubella *Muhlb. cat.* *Willd sp. pl.* iii. 875. *Bigelow med. bot.* iii. t. 54. — P. polygama *Walt. fl. car.* 179. — Dry, sandy, gravelly soils in many parts of the United States.

Root somewhat fusiform, perennial, branching. Leaves, smooth, the lower obovate, smaller; the upper linear-lanceolate, obtuse, mucronated, sessile. Flowers purple, short-crested, in terminal racemes. Bracts small, ovate-lanceolate, caducous. Wings of the calyx rhomboid-oval, obtuse, with a slight middle nerve. Corolla small, closed, of three segments, the middle one largest and crested by the division of its sides and extremity. Anthers 8, forming a double row, the filaments coalescing. Ovary compressed, inversely heart-shaped; style deflexed; stigma bearded inside, with a prominence below it. Capsule inversely heart-shaped, nearly smooth, margined, and invested with the wings of the calyx. Seeds 2, obovate, hairy, with a transparent appendage or strophiole on the inside. From the base of the stems proceed a number of prostrate shoots situated upon, and sometimes nearly under the ground, bearing a row of incomplete fertile flowers. These flowers are furnished with a calyx without wings, acuminate corolla and stamens, and a short style. The ovary and fruit precisely resemble those of the more perfect flowers. *Bigelow.* — A strong bitter taste pervades all the parts. In small doses its infusion is found useful as a tonic, and stimulant to the digestive organs. In large doses it opens the body and excites diaphoresis.

251. P. sanguinea *Linn. sp.* 991. — A supposed antidote to the bite of poisonous reptiles.

252. P. Poaya *Mart. spec. mat. med. bras.* t. 2. and t. 8. f. 6. *Aug. de St. H. pl. us.* No. 71. *fl. bras.* ii. 20. — Brazil; common in the plains of Minas Geraes and Goyaz.

Stem suffruticose, 5-angled. Leaves leathery, 5-nerved. Racemes spicate. Wings of the calyx oblong-elliptical or obovate, obtuse, somewhat longer than the keel. Corolla crested. Seeds clavate, very shaggy. — An active emetic; its root used successfully in the bilious fevers of Brazil; when fresh, scarcely inferior to Ipecacuanha *Martius.*

253. P. crotalarioides *DC. prodr.* i. 327. — Nepal.

Stem branched from the base, suffruticose, decumbent, downy. Leaves obovate-wedge-shaped at the base, stalked. Racemes 8-10, flowered. Wings roundish-obovate, as long as the orbicular ciliated capsule. — A reputed cure for the bite of venomous reptiles.

254. P. Chamæbuxus *Linn. sp.* 989 has properties similar to those of P. Senega.

255. P. venenosa *Juss. in Poir. dict.* v. 493. is said by Commer-

son to be a poisonous plant so much dreaded by the Javanese that they are unwilling to touch it.

256. P. glandulosa *HBK.* v. 404. t. 510. is emetic. *Martius.*

SOULAMEA.

Sepals 5, the 3 outer very small, the 2 inner larger, concave. Petal 1, concave. Stamens 6? Capsule samaroid, indehiscent, compressed, corky, orbicular, emarginate, 2-celled.

257. S. amara *DC. prodr.* i. 335. — Rex amaroris *Rumf. Amb.* ii. 129. t. 41. — Coast of the Moluccas.

A shrub or small tree. Branches few and brittle. Leaves oval, stalked, smooth, 12 or 13 inches long, 3½ wide. Racemes axillary, erect, rather longer than the petioles. Flowers the size of those of the vine, whitish. Fruit compressed, thin at the edges, obcordate, dry; seeds 2 in each cell, resembling cucumber seeds, but smaller; each lying in a small cavity of the cell. — All the parts, especially the roots and fruit, intensely bitter (horrenda amarities *Rumf.*). Employed in the Malayan Archipelago with extraordinary success in cholera, and pleurisy, and most valuable as a febrifuge.

MONNINA.

Flowers resupinate. Sepals 5, deciduous; the 2 inner wing-like; the 3 outer ovate, 2 of them being often connate. Petals connate at the base, concave in the middle, often 3-toothed. Stamens 8, with somewhat diaddelphous hairy filaments. Drupe 2-celled, 2-seeded, or by abortion 1-celled, 1-seeded, sometimes surrounded by a membranous border. Seed pendulous. — Herbs or under shrubs of Tropical America.

258. M. polystachya *Ruiz. in Lamb. cinch.* 144. t. 3. *DC. prodr.* i. 33. — On the Peruvian Andes, among small shrubs, bushes and herbaceous plants, in cold situations. (Yallhoy Masca *Peruv.*)

A downy shrub. Root about 2 feet long, simple, fusiform, very pale; bark about 2 lines thick, readily separating from the wood. Stem erect, about 6 feet high; branches drooping, when young very downy, and slightly purple. Leaves alternate, stalked, ovate-lanceolate, or ovate, acute, or oblong and obtuse, quite entire, smoothish above, villous beneath, about 2 inches long by 1 broad. Racemes compound, terminal, nodding, villous. Calyx small, pale blue, deciduous; the upper sepal ovate, acute, cymbiform, the 2 lower half-connate, shorter, but of the same form, the 2 others roundish-obovate, flat, much larger. Corolla keel-shaped, ventricose at the upper end, white, yellow at the point. Phalanges of stamens 2, tetrandrous, inserted into the base of the corolla. Ovary superior, ovate; style simple, clavate, incurved; stigma simple, truncate. Drupe pendulous, ovate, shining, polished, juicy, monospermous, about the size of a large pea. Stone bony, tawny, oblong-ovate, somewhat 2-edged, uneven with excavated dots;

kernel ovate, white. — The bark of the root when fresh pounded and moulded into balls, or the dry bark is detergent; it readily froths when agitated in water, and is used by the Peruvians as a substitute for soap; the silversmiths of Huanuco employ it for cleansing and polishing wrought silver. Antidysenteric; used with great success in the cure of dysenteries and irritating diarrhœas in Peru, where it is preferred to Quassia. *Ruiz.*

259. M. salicifolia *Fl. Peruv.* has the same properties.

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§ ? KRAMERIACEÆ.

Nat. syst. ed. 2. *p.* 87.

KRAMERIA.

Sepals 4–5, irregular, coloured, spreading, deciduous. Petals 5, or 4, irregular, smaller than the calyx, the 3 inner unguiculate. Stamens, 1, 3, 4, hypogynous, unequal. Ovary 1-celled, or incompletely 2-celled; style terminal; stigma simple; ovules in pairs, suspended. Fruit between hairy and leathery, globose, covered with hooked prickles, by abortion 1-seeded, indehiscent. — Spreading many-stemmed undershrubs. Leaves alternate, simple, entire or 3-foliolate, spreading. Racemes simple, spiked.

260. K. triandra *Fl. peruv.* i. t. 93. *DC. prodr.* i. 341. *N. and E. pl. med.* t. 413. *S. and C.* ii. t. 72. — Dry gravelly and sandy hills in Peru, flowering all the year round. (Ratanhy root.)

A suffruticose plant. Root horizontal, very long and branched; with a thick bark reddish brown outside, red inside. Stem procumbent, much branched, taper. Branches 2–3 feet long, when young silky. Leaves alternate, sessile, oblong and obovate, acuminate, entire, hoary on each side. Flowers solitary, axillary, stalked. Calyx silky externally, smooth and shining inside, of the colour of lac. Two upper petals separate, spathulate; 2 lateral roundish, concave. Drupe dry hairy, burred with dull red hooks. — The extract is styptic and tonic; operates powerfully upon tumours, resolving and restoring tone to those parts; corrects and cures all kinds of ulcers when applied to them in plasters. When administered internally extract of Ratanhia is apt to be rejected by the stomach till 3 or 4 doses have been taken; if the stomach will not retain it the extract should be given in pills, the patient immediately chewing a little lemon and drinking and gargling with vinegar diluted with water. *Ruiz.* Commonly used in Peru as tooth-powder.

LINACEÆ.

Nat. syst. ed. 2. *p.* 89.

LINUM.

Sepals 5, distinct, quite entire or serrated. Petals 5. Stamens 5. Styles 3–5, distinct from the base, or combined to the middle or apex. *W. and A.*

261. L. usitatissimum *Linn. sp. pl.* 397. *E. Bot.* t. 1357. *Fl. Lond.* t. 22. *Woodv.* t. 111. *S. and C.* i. t. 61. — Found in cultivated fields commonly all over Europe and Asia; even on the Neelgherry hills of India.

Root slender. Herb very smooth. Stem 18 inches or 2 feet high, round, straight, leafy, corymbose. Leaves alternate, sessile, acute, 3-ribbed, rather glaucous; the lowermost short and blunt. Flowers several, erect, in a corymbose panicle. Calyx with 3 prominent ribs, and a membranous irregular margin. Petals thin, delicate, roundish, wedge-shaped, readily dropping off, blue, glossy, and with numerous veins. — The meal of the seeds is used for cataplasms. The infusion is demulcent and emollient. The oil mixed with lime-water has been a favourite application to burns.

262. L. catharticum *Linn. sp. pl.* 401. *E. Bot.* t. 382. *Fl. Lond.* t. 19. — Dry pastures in Europe.

Root very small and tapering. Herb smooth. Stems 1 or more, slender and delicate; in the former case very straight and upright; in the latter curved, and ascending obliquely; seldom more than a foot high; all bearing many pairs of upright, obtuse, bright green leaves, and a spreading, forked, terminal panicle. The little white tremulous flowers are pendulous before expansion. Calyx leaves serrated, single ribbed. Petals acute, entire. Stigmas capitate. *Smith.* — This plant is bitter, and powerfully, but, as it seems, not dangerously, cathartic. Dr. Withering found 2 drachms, or more, in a dose, of the dried herb, useful in obstinate rheumatisms. *Smith.* A drachm of the dried plant is a convenient purgative, or we may employ an infusion of a handful of the recent plant. *Pereira.*

263. L. selaginoides *Lam. dict.* iii. 525. *DC. prodr.* i. 424. *Aug. de St. H. fl. bras.* i. 131. — Rocks near Monte Video and in Chili.

Smooth. Stem short, suffruticose, corymbosely branched. Leaves scattered, close together, small, linear, very narrow, terminated by a hair-like mucro. Flowers terminal, subsessile. Petals shorter than the calyx, whitish, or somewhat pink. Ovary completely 10-celled. — Considered bitter and aperient. *DC.*

CISTACEÆ.

Nat. syst. ed. 2. p. 91.

CISTUS.

Sepals 5, nearly equal. Petals 5, much crumpled. Capsule superior, 5 or 10-celled, loculicidal.

264. C. creticus *Linn. syst. veg.* 497. *DC. prodr.* i. 264. *Jacq. ic. rar.* i. 95. — Dry hills in the southernmost parts of Europe.

A shrub, with evergreen leaves, emitting a balsamic odour when rubbed, or after damp warm weather in the summer. Leaves spathulate ovate and oblong, somewhat downy, hairy, dull green, somewhat wavy at the edge, stalked; petioles furrowed, nearly distinct. Peduncles 1–3. Sepals with a long taper point and peduncles villous. Flowers purple. — The gum resin Ladanum is produced principally by this species; it has been much esteemed as a stimulant and emmenagogue; it has also been recommended in chronic catarrh.

265. C. ladaniferus *Linn. sp.* 737.

266. C. Ledon. *Lam. dict.* ii. 17.

267. C. laurifolius *Linn. sp.* 736

are also said to furnish the same substance.

REAUMURIACEÆ.

Nat. syst. ed. 2. p. 91.

REAUMURIA.

Calyx 5-parted, involucrated. Petals 5, permanent, furnished at the base on each side with a ciliated appendage. Stamens numerous, pentadelphous. Stigmas 5–6. Capsule 5-celled, 5-valved, with valves easily separating from the septa. Seeds shaggy.

268. R. vermiculata *Linn. sp. pl.* 754. *Desf. atl.* i. 431. *DC. prodr.* iii. 456. — Desert barren places in Sicily, Barbary, Egypt.

A shrub resembling Salsola fruticosa, erect, branched and smooth. Leaves like those of a Sedum, numerous, scattered, glaucous, fleshy, terete, linear-subulate. Flowers stalked, solitary, white. Petals rather longer than the calyx. — Used at Alexandria as a cure for the itch; when bruised applied externally: in the form of a decoction taken internally.

STERCULIACEÆ.

Nat. syst. ed. 2. *p.* 92.

CAVALLIUM.

Calyx 5-lobed, campanulate, erect. Stamens united into a short cup, which is contracted in the middle and at the end decandrous, half the stamens being longer than the others. Styles short consolidated. Stigma 5-lobed. Follicles 5, coriaceous, few-seeded. Seeds large. — Indian trees with cordate lobed leaves, and panicles of numerous small flowers.

269. C. urens *Schott. meletem.* 33. — Sterculia urens *Roxb. Corom. pl.* i. t. 24. *DC. prodr.* i. 483. *W. and A.* i. 63. — Mountainous parts of the coast of Coromandel, Hindostan, &c. (Bulee, *Hind.*)

Trunk erect, very straight, top large and shady. Bark light ash-coloured, very smooth; its outer coat thin, transparent, covered with a farinaceous substance, and peeling off like the exterior pellicle of the birch bark; inwardly fibrous, and netted. Leaves about the extremities of the branches, alternate, petioled, 5-lobed, 5-nerved; lobes acute, very downy, from 9 to 12 inches each way. Petioles nearly as long as the leaves, round, downy. Panicles terminal, pretty large, covered with a glutinous, farinaceous, yellow down. Bracts lanceolate. Flowers small, numerous, yellow, male and hermaphrodite mixed. Hermaphrodite; calyx campanulate, 5-toothed, leathery; divisions acute; with an obcordate hairy gland on the inside of each division near the base. Corolla none. Filaments 10, alternately longer, united below into a thin sheath. Anthers 2-lobed, alternately larger. Ovary 5-lobed. Style single, short, thick. Stigma 5-lobed. Follicles covered with yellow down, and many stiff stinging hairs. Seeds 3–6. — Yields a gum extremely like Tragacanth, as which it has actually been imported. *Royle.*

STERCULIA.

Calyx deeply 5-parted, spreading. Tube of stamens long, cylindrical, expanded at the apex into a 5-lobed cup, each lobe having 3 teeth and 3 anthers. Styles united, abruptly recurved. Follicles subsessile, many-seeded. — An Indian tree with palmate leaves, and red stinking racemose flowers.

270. S. fœtida *Linn. sp. pl.* 1431. *DC. prodr.* i. 483. *W. and A.* 63. *Schott. meletem.* 32.—(*Rumf.* iii. t. 107.)—Continent and islands of India.

Leaves compound, peltate; leaflets 7–9, oblong, lanceolate, acuminate, when young slightly pubescent, when old smooth. Flowers

panicled. Calyx deeply divided; the teeth spreading, lanceolate, nearly smooth on the outside, slightly velvety within. Anthers 15. Carpels oblong, many-seeded. *W. and A.* — Fruit employed in gonorrhœa in Java. Leaves repellent and aperient. A decoction of the fruit mucilaginous and astringent. *Ainslie.*

SOUTHWELLIA.

Calyx campanulate, 5–7-cleft; the segments cohering at the point. ♂ stamen-tube cylindrical, enclosed in the calyx, with the stamens free at the point, and bearing irregularly a heap of stamens. ♀ stamen-tube like the male, with 15–30 sessile anthers arranged in a simple sinuated row. Ovaries united. Styles adhering, recurved; stigmas somewhat peltate, cohering, radiating. Follicles sessile, few-seeded. — Tropical trees of the old world; leaves usually simple. Flowers usually with a yellowish cast.

271. S. Tragacantha *Schott. meletem.* 62. — Sterculia Tragacantha *Lindl. in Bot. Reg.* t. 1353. — Sierra Leone.

Branchlets downy, ferruginous. Leaves alternate, petiolate, oblong, cuspidate, generally rounded at each end, quite entire except at the apex which is sometimes bifid or trifid, smooth upon the upper surface, downy on the under and on the petiole; down stellate. Panicles densely downy, contracted, axillary, either shorter or longer than the leaves. Calyx campanulate, downy, brownish purple, 5-cleft, the segments shining at the apex. — Known at Sierra Leone as the Tragacanth tree, a gum resembling Gum Tragacanth being copiously exuded by it when wounded.

WALTHERIA.

Calyx 5-cleft, persistent, with a 3-leaved lateral deciduous involucel. Petals 5, equal, attached by their claws to the staminal column. Filaments united into a nearly entire or 5-cleft tube. Ovarium oblique, 1-celled (by the obliteration of 4 cells): ovules 2, superposed. Style single, slightly lateral. Stigma penicillate. Capsule consisting of 1 coccus, nearly globose, membranaceous, 1-seeded, 2-valved. Embryo in the axis of a fleshy albumen. Herbaceous plants, shrubs, or little trees, with stellate pubescence. Leaves entire, serrated. Flowers yellow, axillary and terminal, capitately or spicately conglomerated, with many interposed bracteoles. *W. and A.*

272. W. Douradinha *Aug. de St. Hil. pl. us.* No. 36. *fl. bras.* i. 153. — Rocky banks of the Uruguay in Brazil.

Stems suffruticose, ascending. Leaves ovate or roundish ovate, obtuse, cordate, the lower hairy, the upper downy and glaucous. Heads of flowers terminal, or a few of them axillary. Calyx downy. Petals bearded above the claw. Stamen-tube nearly entire. — Mucilaginous. Brazilians use it in complaints of the chest, and they also believe it serviceable in venereal complaints.

GUAZUMA.

Calyx 5-sepaled, deciduous, the sepals sometimes united 2 or 3 together. Petals 5, concave below, linear-ligulate and deeply bifid at the apex. Stamens very slightly connected at the base: sterile ones 5, lanceolate: fertile ones united into 5 trifid filaments, each opposite to a petal, and bearing 3 anthers. Styles 5, connivent. Stigmas simple. Fruit indehiscent, woody, externally muricated with club-shaped variously-connected tubercles, 5-celled, polyspermous. Seeds ovate-roundish. Albumen very thin, fleshy. Cotyledons plaited. Trees with stellate pubescence. Leaves entire. Peduncles axillary and terminal, somewhat dichotomously branched, many-flowered. *W. and A.*

273. G. ulmifolia *Lam. encycl.* iii. 52. *D C. prodr.* i. 485. *Aug. de St. H. pl. usuelles* t. 14. — Theobroma Guazuma *Linn. sp. pl.* 1100. *Pluk. alm.* t. 77. f. 5. Bubroma Guazuma *Willd. enum.* 806. — South America and West India Islands.

Leaves ovate or oblong, acuminate, unequally toothed, the younger slightly downy, the old ones smooth on both sides. — Old bark esteemed in Martinique a sudorific and useful in cutaneous diseases. Young bark used, on account of the quantity of its mucilage, to clarify sugar. *A. de St. H.*

KYDIA.

Calyx campanulate, 5-lobed, persistent, surrounded by and united at the base with a 4–6-leaved involucel. Petals 5, obliquely obcordate, longer than the calyx, attached by their claws to the base of the staminal column. Samens monadelphous, the tube split about the middle into 5 segments, each bearing 4 anthers closely placed together at the apex: sterile filaments none. Ovarium single, 3-celled: ovules 2, collateral, erect, at the base of each cell. Style 1, 3-cleft. Stigma dilated, peltate, fleshy. Capsule 3-valved, 3-celled, 1–2 cells being occasionally abortive; perfect cells 1-seeded. Seed erect. Trees, with alternate 5-nerved, somewhat 5-lobed leaves. Flowers white, panicled. *W. and A.*

274. K. calycina *Roxb. corom. pl.* iii. 11. t. 215. *DC. prodr.* i. 500. *W. and A.* 70. — Coromandel, Nepal, the Neelgherry mountains and other parts of India.

Leaves roundish, cordate, angularly sinuated, with about 7 palmate veins, sometimes oblique, the uppermost often 3-lobed; downy on the underside. Panicles downy, axillary, in flower shorter than the leaves, in fruit longer. Calyx of the fruit downy, reticulated, with obovate obtuse segments. — Bark used in India in the same way as that of Guazuma ulmifolia in Martinique. *Royle.*

THEOBROMA.

Calyx 5-sepaled. Petals 5, vaulted at the base, ligulate and strap-shaped above. Stamens 15, connected into an urceolus at the base; sterile filaments 5, alternate with the petals, linear, subulate, elongated; fertile ones short, united into 5 filaments, each opposite to a petal and bearing 2 anthers. Style 5-cleft at the apex: stigmas simple. Fruit indehiscent, between coriaceous and woody, ovate-oblong, 5-celled. Seeds imbedded in a buttery pulp (arillus?). Albumen none. Cotyledons thick, wrinkled, full of oil. Small trees. Leaves large, entire. Peduncles axillary, lateral after the fall of the leaves; sometimes simple, 1-flowered, and fascicled, sometimes branched and many-flowered. *W. and A.*

275. T. Cacao *Linn. sp. pl.* 1100. *DC. prodr.* i. 484. — Cacao *Sloane*, ii. 15. t. 160. — West Indies and Continent of America.

A small upright tree. Leaves lanceolate oblong, bright green, entire, stalked. Flowers clustered, axillary, reddish, scentless. Fruit clustered on the old branches, smooth, yellow, or red, oval, about 3 inches long, with a fleshy rind nearly half an inch thick; filled with a whitish pulp, of the consistence of butter (an aril?), sweet, and subacid. Seeds about 25 in each fruit, flesh-coloured. — The torrefied seeds rubbed down with arnotto, vanilla and other ingredients form chocolate, the nutritive restorative properties of which are well known.

ERIODENDRON.

Calyx without bracteoles, irregularly 5-lobed; lobes usually in pairs. Petals 5, united at the base with each other, and with the column of stamens. Filaments joined together into a short tube at the base, but divided upwards into 5 filiform bundles each bearing 2–3 linear or serpentinely bent (anfractuose) anthers, the latter combined and resembling a simple anther. Style crowned by a 5–6-cleft stigma. *W. and A.*

276. E. anfractuosum *DC. prodr.* i. 479. *W. and A.* i. 61. — Bombax pentandrum *Linn. sp. pl.* 959. *Cav. diss.* v. t. 151. (*Rumf.* i. t. 80. *Rheede.* iii. t. 49–51.) — East Indies, both on the continent and islands.

A very large tree. Trunk prickly at the base. Leaves palmate; leaflets 5–8, quite entire, or serrulated towards the point, lanceolate, mucronate, glaucous beneath. Flowers large, woolly, yellowish. Anthers versatile, anfractuose. — Trunk yields a gum which is given in conjunction with spices in certain stages of bowel complaints. *Ainslie.*

HELICTERES.

Calyx tubular, somewhat 5-cleft. Petals 5, ligulate-unguiculate, slightly toothed at the apex. Stamens 5–10–15, united into a

long column that is urceolate and multifid at the apex, the fertile ones mixed with some hair-like sterile filaments. Ovarium on a long stalk. Styles 5, united at the base. Carpels 5, 1-celled, many-seeded, dehiscing on the inside, sometimes straight, usually twisted together spirally. Seeds without albumen: cotyledons spirally convolute. — Shrubs and trees, usually clothed with stellate tomentum. Leaves simple, unequally cordate. Peduncles axillary, few-flowered. *W. and A.*

277. H. Sacarolha *Aug. de St. H. fl. us.* t. 64. *fl. bras.* i. 276. — Common in Brazil. (Sacarolha, Rosea paras malas.)

Leaves roundish ovate, or sharply ovate, hardly cordate, serrate, toothed, covered with rufous down. Petals narrow, hardly longer than the calyx. Stamen-tube octandrous, twice as long as the calyx. Carpels but little twisted. — A decoction of the roots administered in Brazil in venereal complaints.

ADANSONIA.

Calyx without bracteoles, deciduous, 5-partite. Petals 5, united almost to the middle. Urceolus of stamens dilated and expanded upwards. Style very long. Stigmas many, stellate. Capsule woody, indehiscent, 10-celled; cells many-seeded, filled with a farinaceous pulp enveloping the seeds. A spreading large tree. Trunk thick, spongy. Leaves digitate, with 3 leaflets on the young plant, and 5–7 on the adult. Flowers on long axillary solitary pedicels, large, white, with purplish anthers. *W. and A.*

278. A. digitata *Linn. sp. pl.* 960. *Cav. diss.* v. 298. t. 15. *Lam. illustr.* t. 588. *DC. prodr.* i. 478. *W. and A.* i. 60. *Bot. Mag.* t. 2791 and 2792. — A. Baobab *Gærtn.* ii. t. 135. Baobab *Alpin. ægypt.* 66. t. 67. — Senegal, Sierra Leone, (Lalo.)

A tree of moderate elevation, but whose trunk is of vast thickness, from 20 to 30 feet in diameter, soon dividing into branches of great size, and bearing a dense mass of leaves, which are digitate, quinate, glabrous, petiolated; leaflets elliptical, scarcely acuminated, veined: petiole cylindrical, downy. Flowers axillary, solitary, very large, pendent. Peduncle 4–6 inches long, terete, pubescent, with about 2 linear-lanceolate bracts near the top; calyx very large, cup-shaped, externally green and pubescent, within pale and silky, cut into 5, large, revolute segments: its substance thick, and somewhat coriaceous. Petals 5 spreading, at length deflexed, white, roundish, waved, faintly striated. Tube of the stamens long, thick, united to the base of the petals, terminated by very numerous, spreading, afterwards recurved filaments, each bearing a 1-celled anther, of a reddish-brown colour. Ovary ovate, silky, tapering upwards into a very long, thickish, filiform style, which is, in age, bent down at an angle: stigma of 7 to 10, spreading, pubescent rays. Fruit, a large, oblong or obovate, indehiscent, downy, pericarp; 8 or 10-celled; but in a dry state, the partitions seem to be only formed

by tough, stringy fibres. Each cell is filled with a pulpy substance, which, when old and dry, becomes pithy, and in this the seeds are immersed. These are kidney-shaped, brown, shining, hard, with a few pale dots, filled within by the white fleshy embryo, whose cotyledons are foliaceous, and singularly convoluted around the inferior radicle. *Hooker.* — Mucilaginous. Dried leaves in powder found serviceable in diarrhœa, fevers, and other maladies. Pulp of the fruit subacid; its juice considered a specific in the putrid pestilential fevers of the Gold Coast. Fruit a common article of consumption among the negroes.

MALVACEÆ.

Nat. syst. ed. 2. p. 95.

SIDA.

Calyx 5-cleft, persistent, without an involucel. Ovarium 5- or many-celled, with a solitary ovule in each cell. Styles 5, or more, according to the number of cells. Stigmas capitate. Capsule consisting of 5 or more 1-seeded, often 2-valved cocci. Radicle superior. *W. and A.*

279. S. cordifolia *Linn. sp. pl.* 961. *Cav. diss.* i. 19. t. 13. f. 1. *DC. prodr.* i. 464. *W. and A.* i. 58. — (*Rheede.* x. t. 54.) — East Indies.

Shrubby. Leaves cordate, roundish or ovate, obtuse, or scarcely acute, bluntly serrated, velvety or tomentose. Pedicels jointed near the flower, axillary, solitary, from twice as short to twice as long as the petiole, occasionally arranged in very short axillary almost leafless young branches. Carpels 9–10, with 2 setaceous downward-pointing hairy beaks, as long as the carpel itself. *W. and A.* — The leaves mixed with rice are given in India to alleviate the bloody flux.

280. S. acuta *Burm. ind.* 147. *Cav. diss.* i. t. 2. f. 3. *DC. prodr.* i. 460. *W. and A.* i. 57. — S. lanceolata *Willd. sp. pl.* iii. 736. S. Stauntoniana *DC. prodr.* i. 460. (*Rheede.* x. t. 53.) — East Indies.

Shrubby. Branches without tubercles under the leaves: leaves narrow lanceolate, acuminated, glabrous, or slightly sprinkled above and on the nerves beneath with bristly hairs, coarsely simply serrated, the serratures patent: stipules linear-acuminate, stiffish, striated with several longitudinal nerves, ciliated, often longer than the petiole: pedicels axillary, solitary, not shorter than the petiole, nor longer than the stipules; jointed above the middle; sometimes arranged in a short axillary almost leafless branch: carpels 5–9, birostrate. *W. and A.* — Root intensely bitter and considered a valuable stomachic. *Ainslie.*

*** Various species of this genus, especially Sida carpinifolia, are used in Brazil in the same way as Marsh Mallow in Europe.

ABUTILON.

Calyx 5-cleft, persistent, without an involucel. Ovary 5- or many-celled, with 3, rarely more, ovules in each cell. Styles 5 or more. Stigmas capitate. Capsule composed of 5 or more, 3- or rarely 4–6-seeded, 2-valved cocci. Leaves cordate. Peduncles axillary, solitary or rarely in pairs, 1–2 or many-flowered; sometimes by the abortion of the upper leaves forming terminal spikes. *W. and A.*

281. A. indicum *G. Don Mill. dict.* i. 504. *W. and A.* i. 56. — Sida indica *Linn. sp. pl.* 964. *Cav. diss.* i. t. 7. f. 10.

S. populifolia *Lam.* Beloere *L'Herit.* Heteromischos *Cav. diss.* v. t. 128. f. 2. (*Rheede.* vi. t. 65. *Rumf.* iv. t. 11.) — Common in most parts of India.

Leaves cordate, somewhat lobed, soft, shortly tomentose, unequally toothed: stipules reflexed. Pedicels erect, longer than the petiole, jointed near the flower. Calyx-segments ovate, acute. Corolla spreading. Capsule truncated, evidently longer than the calyx; carpels 11–20, acute, not awned, hairy. *W. and A.* — This and other allied species, used generally in India as a substitute for marsh-mallow, as an emollient.

SPHÆRALCEA.

Involucre 3-leaved, deciduous. Calyx 5-cleft. Petals 5, obliquely emarginate. Stamen-tube shorter than the petals, polyandrous. Ovary many-celled; cells 3-seeded; styles chiefly consolidated; stigmas capitate. Capsule globose, umbilicated, downy: cells dehiscent at the back, finally separable, 1–2-seeded. — Trees, shrubs, or undershrubs. Peduncles axillary.

282. S. cisplatina *Aug. de St. H. pl. us.* t. 52. *fl. bras.* i. 210. —Not uncommon in the western part of the Cisplatine province of Brazil. (Malvavisco.)

Stem shrubby, slender. Leaves ovate, somewhat 3-lobed, dentate or crenate, hoary underneath. Flowers axillary, racemose, secund. Leaves of involucre setaceous, deciduous. — A decoction used in Brazil in inflammations of the bowels, and generally for the same purposes as marsh mallows in Europe.

PAVONIA.

Calyx 5-cleft, persistent, surrounded by a 5–15-leaved involucel. Ovarium with 5, or rarely 4, 1-ovuled cells. Style 1, 8–10-cleft at the apex. Stigmas 8–10. Carpels 5, or rarely 4, capsular, connivent, 2-valved, 1-seeded. Radicle inferior. *W. and A.*

283. P. diuretica *Aug. de St. H. pl. us.* t. 53. *fl. bras.* i. 234. —Grassy plains near Mangahy, in the western desert part of the province of Minas Geraes in Brazil.

Leaves cordate, acuminate, tooth-serrated, velvety on both sides with transparent dots. Flowers axillary, solitary, sulphur coloured. Involucre 6–7-leaved, shorter than the calyx. Carpels angular, mucronate at the point. — A decoction is employed in Brazil with success in cases of dysury.

MALVA.

Calyx 5-cleft, persistent, surrounded by an involucel of usually 3, rarely 1–2 or 5–6, more or less oblong or setaceous bracteoles. Ovarium with many cells, each with 1 ovule. Styles as many as the cells. Carpels several (rarely only 5), capsular, indehi-

scent, 1-seeded, circularly arranged round the axis. Radicle inferior. *W. and A.*

284. M. sylvestris *Linn. sp. pl.* 969. *E. Bot.* t. 671. *Fl. Lond.* t. 51. *Woodv.* t. 54. *DC. prodr.* i. 432. — Common in waste places all over Europe. (Common Mallow.)

Root tapering, branching, whitish. Leaves deep green, soft and downy, serrated, plaited, with 7 acute lobes; the uppermost with fewer, but deeper, and more acute, lobes, than the lower ones. Flowers numerous, of a shining purple, veiny, on simple, aggregate, hairy, axillary stalks. Pollen whitish, large. Ripe carpels reticulated at the back. — Mucilaginous and emollient like the marsh-mallow. In tenesmus it is employed as a clyster; in external inflammations as a poultice.

ALTHÆA.

Calyx surrounded by a 6–9-cleft involucel. Carpels numerous, capsular, closely and circularly arranged round the axis. *W. and A.*

285. A. officinalis *Linn. sp. pl.* 966. *E. Bot.* t. 147. *Woodv.* t. 53. *DC. prodr.* i. 436. *S. and C.* i. t. 51. — Common in most parts of Europe near the sea. (Marsh Mallow.)

Root tap-shaped, rather woody. Herb of a hoary green, peculiarly soft and downy, with fine starry pubescence. Stems several, about 1 yard high, simple, round, leafy, tough and pliant. Leaves ovate or heart-shaped at the base, various in breadth, plaited, 5-ribbed, unequally serrated, soft and pliable, more or less deeply divided into 5 acute lobes. Flowers in very short, dense, axillary panicles, rarely solitary, of a delicate uniform blush colour. Involucre with 8, 9, 10 or 12 divisions. *Smith.* — The whole plant, especially the root, yields in decoction a plentiful tastless colourless, mucilage, very salutary in cases of irritation. It is used as a demulcent for children and is a favourite medicine with the French who employ it constantly in poultices, lozenges &c. under the name of Guimauve.

URENA.

Calyx persistent, surrounded by a 5- (or rarely 10) -cleft persistent involucre. Style 1, 10-cleft at the apex. Carpels 5 (or by abortion 4), capsular, connivent, indehiscent, 1-seeded, usually echinated externally with numerous prickles having multifid reflexed points (glochidate). Radicle inferior. Leaves usually bearing beneath glandular pores on one or more of the nerves near the base. *W. and A.*

286. U. lobata *Linn. sp. pl.* 974. *DC. prodr.* i. 441. *W. and A.* i. 46. — (*Dill. elth.* t. 319. f. 412. *Rumf.* vi. t. 25. f. 2. A.) — East Indies.

Herbaceous. Leaves roundish, with 8 or more short sometimes obsolete acute or obtuse lobes, more or less velvety, 5–7-nerved, with 1 or sometimes 3 glands. Segments of the involucre 5, oblong-lanceolate, equal to the expanded calyx. Carpels densely pubescent, echinate.

W. and A.—Decoction of the root and stem used in Brazil as a remedy in windy colic; flowers as an expectorant in dry and inveterate coughs.

ABELMOSCHUS.

Calyx 5-toothed, spathaceous, deciduous, surrounded by a 5–10-leaved often very caducous involucel. Ovarium 5-celled; cells with many ovules. Style 1, 5-cleft at the apex. Stigmas 5. Capsule 5-celled, 5-valved, loculicidal, polyspermous. Seeds naked.

287. A. esculentus *W. and A.* i. 53.—Hibiscus esculentus *Linn. sp. pl.* 980. *Cav. diss.* t. iii. 61. f. 2. *DC. prodr.* i. 450. H. longifolius *Roxb. fl. ind.* iii. 210. — West Indies: cultivated all over the warmer parts of the world. (Okra, Bendee, Gombo.)

An annual. Stem erect, branched, 3–6 feet high, round, towards the base somewhat woody, and in a good soil, as thick as a man's wrist; tender parts covered with sharp bristles, and often spotted with purplish specks. Leaves alternate, stalked; inferior ones only angular, about the middle of the plant palmate, while the superior ones are subdigitate, with the divisions lanceolate-oblong; all serrate, and somewhat bristly. Petioles round, bristly, as long as the leaves. Flowers axillary, solitary, on short stalks, very large, pale yellow, with a dark crimson bottom. Involucre 1 from 6 to 12-leaved; leaflets linear, bristly, deciduous. Calyx spathiform, bursting on 1 side, of a remarkably soft texture. Stigmas as many as the cells in the capsule. Capsule from 6 to 12 inches long, and about 1 in diameter, somewhat bristly, particularly the ridges, their number corresponding with that of the cells, and valves, with a single row of round, smooth seeds in each cell. — Abounds in a copious mucilage; a valuable emollient and demulcent. Constantly used in hot countries as a means of thickening soup. Leaves are used to form emollient poultices.

288. A. moschatus *W. and A.* i. 53. — Hibiscus moschatus *Linn. sp. pl.* 980. *DC. prodr.* i. 452. H. longifolius *Willd. sp. pl.* iii. 827. *DC.* l. c. 450. *Rheede.* ii. t. 38.

Stem herbaceous, hispid with spreading hairs, not prickly. Leaves, and long petioles, hispid with rigid hairs, but otherwise glabrous, unequally and coarsely toothed, deeply 5–7-lobed; lobes all spreading, oblong or lanceolate, acuminated. Pedicels harshly pubescent, axillary, about as long as the petioles. Involucral leaves 6–10, linear, hairy, somewhat persistent. Capsule oblong, acuminated, hairy. *W. and A.* —Dr. Wm. Hamilton quotes an instance of its powerful effects in counteracting the fatal influence of the bite of venomous reptiles. The bruised seeds were rubbed on the wound, and a considerable quantity forced down the throat of the animal in question. *Trans. med. bot. soc.* 1834, p. 72. Musky seeds considered cordial and stomachic and by the Arabs mixed with coffee.

DIPTERACEÆ.

Nat. syst. ed. 2. *p.* 98.

VATERIA.

Calyx 5-partite: segments sometimes afterwards enlarged, equal. Petals 5. Stamens 15–30: anthers tapering. Ovary 3-celled, with 2 pendulous ovules in each cell. Seed solitary: cotyledons stalked: radicle superior. — Trees. Leaves oblong, entire, coriaceous, glabrous. Panicles axillary or terminal, with white flowers. *W. and A.*

289. V. indica *Linn. sp. pl.* 734. *Gærtn.* iii. t. 189. *Roxb. fl. ind.* ii. 602. *W. and A.* i. 83. — Elæocarpus copalliferus *Retz. obs.* iv. n. 85. Paenoe *Rheede* iv. t. 15. — Malabar.

A large tree. Young shoots downy. Leaves oblong, stalked, entire, emarginated or obtuse, smooth, leathery, 4–8 inches long; stipules oblong. Panicles terminal. Flowers distant, stalked, rather large. Bracts oblong, 1-flowered. Calyx 5-parted, villous. Petals 5, oval, emarginate. Stamens 40–50; anthers beaked. Ovary downy, conical, 3-celled; cells each containing 3 ovules, pendulous; style longer than the stamens; stigma acute. Pericarp coriaceous, oblong, obtuse, 1-seeded, 1-celled, 3-valved, about $2\frac{1}{2}$ inches long and $1\frac{1}{2}$ inch broad. — Tree exudes an abundance of a resin like copal, which hardens of a deep amber colour; in its fluid state it is the *Piney varnish* of the South of India; in its solid state it is the *Gum Animi* of the shops.

DIPTEROCARPUS.

Calyx of 1 piece, 5-cleft: 2 of the segments, when in fruit, expanded into long ligulate scarious wings. Petals 5. Stamens numerous, membranous at base, distinct; anthers long, linear, tapering. Ovarium 3-celled, with 2 pendulous ovules in each cell. Seed solitary: cotyledons crumpled: radicle superior. — Large trees. Flowers in racemes, white tinged with red.

290. D. trinervis *Blume Fl. Jav. sub Dipteroc.* No. 1. p. 11. t. 1. — Ancient forests of Java, 2000–3000 feet above the sea.

A tree 150–200 feet high. Leaves oval, rather acute, somewhat rounded at the base, smooth, as well as the linear attenuated leafbuds. Petals pale yellow with a pink stripe in the middle, united at the base, lepidote on the outside. Calyx of the fruit with the larger segments oblong-lanceolate, obtuse.—Like others of this genus the tree abounds in a resinous secretion; which, in this species, is spoken of by Blume as an excellent material as salves for inveterate ulcers, when it is desirable to excite the wound, and to correct the pus. Dissolved in spirits of wine, or formed into an emulsion with yolk of egg, it has the

same effect as Balsam of Copaiva upon the mucous membranes. Hence it is recommended in cases of secondary gonorrhœa, when all symptoms of inflammation have gone off.

Other species of Dipterocarpus and some Shoreas yield the substance known in India as *Wood-oil*, a thin liquid balsam, much used in painting ships, houses, &c.; but I do not find them spoken of medicinally.

DRYOBALANOPS.

Calyx leathery, 5-parted; segments equal. Petals convoluted in æstivation. Stamens numerous; their filaments consolidated in 2 rows into a cylindrical fleshy tube longer than the ovary; anthers almost sessile on the tube, linear, mucronate. Ovary superior, 3-celled; ovules 2 in each cell, pendulous; style filiform; stigma obscurely 3-lobed, papillose. Calyx of the fruit cup-shaped, with the foliaceous permanent divisions equal, distant and much shorter than the 3-valved nut.

291. D. aromatica *Gærtn. Blume Fl. Jav. sub Dipteroc.* p. 6. — Shorea camphorifera *Roxb. fl. ind.* ii. 616. D. Camphora *Colebrooke As. research.* xii. 535. *fig. Jack in Comp. Bot. mag.* i. 264. (*Grimm. ephem. nat. cur. dec.* ii. 1683 *obs.* 163. p. 371. *Houtt. verhandel. van. te holl. maatsch. te Haarl.* 1784. xxi. p. 266–274. t. 8.) — Sumatra and Borneo.

A large tree. Upper leaves alternate, lower opposite, all elliptical, obtusely acuminate, entire, smooth, with strong pinnated veins, 3–7 inches long, 1–2 broad; their petioles short. Stipules in pairs, deciduous. Nut 1-celled, 3-valved, woody, fibrous, seated in a permanent hemispherical calyx whose segments are enlarged, equal, spathulate, rigid, reflexed, very distant at the base, and much shorter than the nut.—The trunk contains both oil and camphor in a cavity or cavities occupying the centre of the tree. The camphor-oil is supposed to be the incipient condition of the camphor itself; the latter is found in pieces as long as a man's arm, weighing from 11 to 12 lbs.

This kind of Camphor is extremely valuable, but on account of its high price, it does not find its way to Europe; it is chiefly exported to China and Japan, where it is highly valued for its stimulant tonic properties. It is obtained from fissures in the bark and wood, as well as by means of incisions; the texture is much firmer than that of common camphor, and therefore it is not volatilised by exposure to the air. Hence it is much slower in its operation medicinally than common camphor, but much more durable and certain. *Blume.*

The botanical account of this rare plant is made up in part from the writings of Gœrtner, Blume and Colebrooke, and partly from dried flowers given me by the late Mr. Colebrooke. It is no doubt a genus quite distinct from Dryobalanops, as Dr. Blume, who had not examined the flowers, has rightly asserted. The figure in *S. and C.* iii. t. 170 can hardly be intended for this; I therefore do not quote it.

292. Shorea robusta *Roxb.* yields the resinous substance called Dammer in India, used for various economical purposes; not used so far as I know in medicine.

TILIACEÆ.

Nat. syst. ed. 2. p. 99.

TILIA.

Calyx 5-parted, deciduous. Petals 5, naked, or furnished with a scale in the inside near the base. Stamens numerous; filaments distinct or slightly polyadelphous. Ovary globose, villous, with 1 style, and five 2-seeded cells. Nut leathery, by abortion 1–2-celled, 1–2-seeded.

293. T. europæa *Linn. sp. pl.* 733. *E. Bot.* t. 610. — A common tree all over the north of Europe. (Lime or Linden Tree.)

A tall and handsome, hardy tree, with smooth, round, brown, leafy, spreading branches, green while tender. Leaves 3 or 4 inches broad, and rather more in length, undivided; unequal, and somewhat heart-shaped, as well as entire, at the base; the margin acutely and rather unequally serrated; the point elongated, acute, serrated at its base; upper surface quite smooth, of a bright pleasant green; under paler, or slightly glaucous, likewise smooth, except small depressed tufts of brown woolly hair, where the lateral ribs branch off from the 5 principal ones. Stipules oval, smooth, in pairs at the base of each footstalk, soon deciduous. Footstalks cylindrical, slender, smooth, not half so long as the leaves. Flower-stalks axillary, cymose or imperfectly umbellate, smooth, hardly so long as the leaves, drooping, with from 6 to 10 flowers; each bearing an oblong, smooth, pale, flat, entire, membranous bract, originating above the base of the flower-stalk, and for about half its length firmly united therewith, its blunt point nearly on a level with the flowers, or longer. Flowers greenish, delightfully fragrant, especially in an evening. Petals obovate, pale lemon-coloured, destitute, like all our European species, of the scales attached to the petals of the American ones. Stamens spreading, shorter than the corolla. Ovary densely hairy; stigma 5-lobed. Capsule downy, leathery, not woody, uncertain in the number of perfect cells and seeds. *Smith.* — Flowers, separated from the large leafy bracts, are used as an infusion in Austria with much success in vertigo and spasms; they promote perspiration and alleviate coughs. But if the bracts and fruit are mixed with the flowers, the infusion then becomes astringent and confines the bowels. *Host.*

TRIUMFETTA.

Sepals, 5, obtuse, or apiculate beneath the point. Petals 5, or occasionally 0. Stamens 10-30, free or scarcely united except at the very base. Ovary roundish. Style 1. Carpels 4, more

or less closely combined into a capsule bristling with setæ hooked at the point. Seeds 2, or solitary, in each cell. *DC.*

293. *a.* T. Lappula *Linn. sp. pl.* 637. *DC. prodr.* i. 506. — West Indies and Brazil.

Leaves cordate, roundish, unequally toothed, somewhat villous, 5-nerved, 3-lobed; lobes acuminate. *DC.*

293. *b.* T. semitriloba *Linn. mant.* 73. *DC. prodr.* i. 507. — West Indies and Brazil.

Leaves ovate at the base, 3-lobed, with callous serratures, velvety on each side; the lower almost 5-lobed, the upper oblong, undivided. Calyx pubescent; sepals apiculate. Fruit globose, hairy, echinate, with the setæ hairy backwards. *DC.* — The mucilaginous, and at the same time astringent, properties of the leaves and fruit of these shrubs, called Carapixo da Calcada in Brazil, which grows everywhere, especially on the road-side and in the vicinity of dwellings, render it serviceable for injections in inveterate gonorrhœa.

LYTHRACEÆ.

Nat. syst. ed. 2. *p.* 100.

AMMANNIA.

Calyx bracteolated at the base, more or less campanulate, 4–7-lobed; lobes flat or incurved, the angles usually expanding into spreading accessory teeth or horns. Petals 4–5, or wanting. Stamens as many or twice as many as the calycine lobes. Ovary 2–3–4-celled. Style shortish or elongated. Stigma capitate. Capsule ovate-globose, membranaceous, either bursting transversely, the upper part falling away with the style, or opening by valves. Seeds numerous, attached to thick central placentas. — Herbaceous plants growing in wet soil or in water, all nearly quite glabrous. Stems 4-angled or occasionally terete when old. Leaves opposite, quite entire. Flowers axillary, sessile, or shortly peduncled, bracteolated at the base. *W. and A.*

294. A. vesicatoria *Roxb. fl. ind.* i. 426. — Common in Hindostan in cultivated ground. (Daud-maree *Beng.*)

Stem erect, from 6 to 36 inches high, obsoletely 4-sided, much branched. Lower branches opposite, decussated; upper frequently alternate. Leaves opposite, sessile, lanceolate, smooth; those next the flowers much smaller than the others. Corolla 0. Pericarp 1-celled, 1-valved, half covered with the calyx. — The whole plant has a strong muriatic smell. Leaves acrid; universally employed by the natives of India to raise blisters in rheumatic pains, fevers, &c. The fresh leaves bruised, perform their office effectually in half an hour. *Roxb.*

HEIMIA.

Calyx hemispherical-campanulate, bracteolated at the base, with 6 erect lobes, and as many alternating horn-shaped patent angles. Petals 6, alternate with the erect lobes. Stamens 12, somewhat equal. Ovary sessile, nearly globose, 4-celled. Capsule included within the calyx. Seeds numerous, minute, wingless. — Glabrous herbaceous plants. Peduncles 1-flowered, shorter than the calyx.

295. H. salicifolia *Link. and Otto abbild.* t. 28. *DC. prodr.* iii. 89. — Nesæa salicifolia *HBK. n. g. amer.* vi. 192. — New Spain on the volcano of Jorullo.

Leaves ternate or opposite, the upper often alternate, on very short stalks, lanceolate, acute, narrowed to the base. Petals obovate. — A powerful sudorific and diuretic. The Mexicans consider it a patent medicine in venereal disorders, and call it *Hanchinol.*

LYTHRUM.

Calyx cylindrical, striated, with 4–6 broad teeth, and the same number of alternate smaller subulate diverging ones. Petals 4-6, alternate with the erect teeth of the calyx. Stamens in the middle or at the base of the calyx, twice as numerous as the petals or equal to them in number, or even fewer. Style filiform. Stigma capitate. Capsule oblong, enclosed in the calyx, 2-celled, many-seeded. Placentæ thick, adhering to the dissepiment. — Leaves entire. Flowers purple or white.

296. L. Salicaria *Linn. sp. pl.* 640. *EB.* t. 1061. *Fl. Lond.* t. 28. *DC. prodr.* iii. 82. *S. and C.* iii. t. 146. — Ditches and wet places in Europe, the West of Asia, New Holland, and North America.

Root woody, branching at the crown. Stems from 2 to 4 feet high, erect, acutely quadrangular, either smooth or downy, leafy, generally simple. Leaves nearly sessile, lanceolate, acute, entire, various in length, the upper ones diminished to bracteas; all mostly opposite; but there are occasionally 3, or even 4, in each whorl; in which cases the number of angles in the stem is likewise increased. Flowers in numerous axillary whorls, 6 in each, of a variable crimson or purple, composing long leafy spikes. Six of the calyx-teeth are long and reddish; the others minute. Anthers conspicuous, red, with green or yellow pollen. Capsules elliptical, small. The herbage, generally almost smooth and of a dark green, becomes in dry situations hoary and downy, or in some degree hairy, as well as more dwarf in stature. *Smith.* — An astringent, which has been recommended in inveterate cases of diarrhœa.

MELIACEÆ.

Nat. syst. ed. 2. *p.* 101.

MELIA.

Calyx 5-partite. Petals 5, patent. Stamen-tube 10-cleft at the apex, with 10 anthers in the throat; segments 2–3-partite; anthers opposite to the segments and a little shorter, oblong, slightly apiculate. Ovary seated on a short disk, 5-celled; cells each with 2 superposed ovules. Style columnar, breaking off from the top of the ovary: stigma 5-lobed. Fruit a drupe, with one 5-celled bony nut: cells 1-seeded. — Trees. Leaves alternate, bipinnate: leaflets in pairs with an odd one, toothed. Peduncles axillary, simple below, above panicled, branched and many-flowered. The number of parts of the flower occasionally increased by a fifth. *W. and A.*

297. M. Azedarach *Linn. sp. pl.* 550. *Cav. diss.* p. 363. t. 207. *DC. prodr.* i. 621. — Syria, East Indies; now common in the South of Europe.

A bush 8–10 feet high. Leaves alternate, unequally bipinnate; leaflets opposite, ovate, acute, serrated, sometimes incised. Flowers in terminal panicles. Petals pale pink inside, deep lilac outside. Tube of the stamens deep violet; anthers yellow. Fruit the size of a small olive. — Root bitter and nauseous, used in North America as an anthelmintic; the pulp that surrounds the seeds is said to be deleterious, but this is denied by Turpin.

TRICHILIA.

Calyx short, 4–5-toothed. Petals 4–5, distinct. Filaments 8–10, united at the base, or occasionally altogether into a tube; anthers erect, exserted. Ovary 3–2-celled, with two pendulous ovules in each cell; seated in a fleshy annular disk of variable depth; stigma capitate, 2–3-lobed. Capsule loculicidal, 3- or rarely 2-valved. Seeds with a fleshy aril. — Trees or shrubs, with unequally pinnated leaves. Flowers panicled or racemose, axillary.

298. T. emetica *Vahl. Ad. de Juss. Meliac.* 84. — Elcaja *Forsk. fl. æg. arab.* 127.—Common on the mountains of Yemen; also in Senegal. (Roka.)

A tree. Branches villous. Leaves alternate, unequally pinnated, with a taper villous stalk; leaflets in 4 pairs, oval-oblong, silvery with down on the under side. Flowers like those of an orange, in axillary corymbs collected into a panicle. Calyx campanulate, villous. Petals villous outside, linear, recurved. Filaments 10, white, linear. Capsules obovate, 3-valved, an inch long. Seeds enveloped in a red aril. —

The fruit used by the Arabs as an emetic under the name of *Djouz elkai.* Ripe seeds formed with Sesamum oil into a salve against the itch.

299. T. trifoliolata *Linn. sp. pl.* 551. *Jacq. amer.* 129. t. 82. *A. de Juss. Meliac.* p. 84. — Dry grassy places in Curaçao.

A small tree, or rather large bush, with a slight unpleasant odour. Leaves ternate, shining, on a stalk about an inch long; leaflets obovate, wedge-shaped at the base, entire, obtuse, the middle one the largest. Racemes axillary, very short. Flowers small. Calyx campanulate, 5-toothed. Petals whitish, erect. Capsules green, with grey spots; seeds solitary, with a scarlet aril. — The female slaves in Curaçao use a decoction of the roots to procure abortion; the Dutch call the tree *Kerseboom,* the Spaniards *Ceraso macho.*

GUAREA.

Calyx short, 4-toothed. Petals 4, distinct. Filaments 8, united into a prismatical cylindrical tube, having 8 anthers below its apex inside. Ovary on a disk, sometimes like a stalk, 4-celled, with 1–2 ovules in each cell; stigma discoidal. Capsule smooth, ribbed or warted, loculicidal, 4-valved, with 1–2 seeds in each cell. — Trees or shrubs, with pinnated leaves and axillary panicles.

300. G. trichilioides *Cav. diss.* 366. t. 210. *A. de J. Meliac.* 88. — Melia Guara *Jacq. amer.* 126. t. 176. f. 37. — Mountainous woods of Cuba.

A small tree. Leaves pinnate, alternate, shining, 1½ foot long; leaflets 7–14, oblong, obtuse, attenuated at the point, quite entire. Racemes lax, 6 inches long. Flowers scentless, on very short stalks. Petals greenish white. Tube of the stamens white. Fruit the size of a hazel nut. — Juice of the bark purgative and violently emetic.

301. Guarea Aubletii *A. de J.* (Trichilia Guara of *Aublet*) is very nearly related to the last, and perhaps not really distinct. Its bark is a violent emetic and purgative; a decoction of it is said to produce similar effects, but in a milder manner.

XYLOCARPUS.

Calyx urceolate, 4-cleft. Petals 4, distinct, reflexed. Stamen-tube urceolate, 8-cleft at the apex, the segments acute, bipartite: anthers 8, included, erect, opposite to the segments. Ovary seated on a disk broader than itself and concave, 4-furrowed, 4-celled; cells 1–5 ovuled. Style short, with a broad concave discoid stigma. Fruit (large) spherical, 6–12-seeded: pericarp splitting into 4 valves opposite to the dissepiments; the dissepiments attenuated into membranes, and nearly obliterated. Seeds inserted on the remains of the central axis, ascending, angled, with a spongy integument. Cotyledons very thick, combined: radicles short, dorsal. Trees. Leaves abruptly

pinnated. Panicles axillary or terminal. Flowers few, lax. *W. and A.*

302. X. Granatum "*Konig. naturf.* 20. p. 2." *Roxb. fl. ind.* ii. 240. *W. and A.* i. 121. *A. de J. Meliac.* 92. — Carapa moluccensis *Lam. dict.* i. 261. *DC. prodr.* i. 626. (*Rumf.* iii. t. 61. ?) — Various parts of the East Indies.

Leaves from 6–12 inches long, with the leaflets in 2 pairs, elliptical, obtuse, sometimes slightly acute at base, smooth, about 4 inches long; petioles round, smooth, dark brown. — Extremely bitter.

303. X. obovatus *A. de J. Meliac.* p. 92. — Carapa obovata *Blume Bijdr.* p. 179.— Coast of Java. (Nirie.)

Leaflets in 1–2 pairs, opposite, obovate, rounded, coriaceous, rather convex. Calyx urceolate, 4-cleft. Petals 4, oval, concave. — Like the last.

SANDORICUM.

Calyx shortly 5-lobed. Petals 5, spreading. Stamen-tube cylindrical, 10-toothed, bearing 10 anthers on the inside below the apex. Disk expanding upwards into a short membranaceous tube, sheathing the base of the style, torn and 5-toothed at the apex. Ovary half immersed in the bottom of the calyx: ovules 2 in each cell, collateral, pendulous. Stigma long, simple and globose at the base, above 5-lobed; with the lobes emarginate and slightly diverging. Fruit baccate, apple-like, 3–5-celled. Seeds solitary, with a parchment-like arillus, pulpy on the outside. — Trees. Leaves trifoliolate. Panicles axillary. Flowers crowded on the partial peduncles.

304. S. indicum *Cav. diss.* 359. tt. 202, 203. *Lam. ill.* t. 350. *DC. prodr.* i. 621. *A. de J. Meliac.* 80. *W. and A.* i. 119. (*Rumf.* i. t. 61.) — Philippines, Moluccas, and various parts of the East Indies.

A tree. Leaves ternate, on long stalks, alternate; leaflets ovate, acuminate, entire, smooth above, downy below, as is the common petiole. Flowers small, in racemes, about 6 inches long. Fruit the size and form of an apple, with an acid alliaceous flavour, and a tender whitish flesh. — Root aromatic, stomachic and antispasmodic. It is employed in Java against leucorrhœa, combined with the bark of the root of Xylocarpus obovatus, which is extremely bitter. *Blume.*

CEDRELACEÆ.

Nat. syst. ed. 2. p. 103.

SWIETENIA.

Calyx obsoletely 5-toothed. Petals reflexed. Filaments 10, united into a campanulate cup, having the anthers below the apex, inside. Ovary surrounded by an annular disk, with 5 cells and about 12 ovules in each cell; stigma discoidal. Capsule egg-shaped, 5-celled, septicidal, 5-valved; the sarcocarp woody, very thick, separating from the endocarp; and both from a large 5-cornered permanent axis. Seeds imbricated, winged.

305. S. Mahagoni *Linn. sp. pl.* 271. *Jacq. amer.* 127. *Cav. diss.* 365. t. 209. *A. de J. Meliac.* 97. — Hotter parts of America. (Mahogany tree.)

A large tree, with a very rough tuberculated bark when young. Leaves equally pinnated; leaflets opposite, very smooth, ovate, lanceolate, acuminate, oblique, and as it were falcate. Flowers in axillary panicles. Flowers small, whitish. Fruit the size of a hen's egg. — Bark used in the West Indies as a substitute for Peruvian Bark, but inferior to it.

SOYMIDA.

Sepals 5. Petals spreading, unguiculate. Stamen-tube cup-shaped, 10-lobed, each lobe with 2 teeth at the apex, and an anther between the teeth, below them. Ovarium seated on the disk, which is broader than itself, and covers the bottom of the tube, 5-celled: ovules 12 in each cell. Style short, equal, 5-angled: stigma thick, peltate 5-angled. Capsule, oblong-obovate, 5-celled, 5-valved, dehiscing from the apex, septifragal: the thin woody sarcocarp in each valve becoming detached from the endocarp, and both from the large persistent 5-angled axis. Seeds pendulous, winged all round, especially upwards and downwards. — Leaves abruptly pinnate: leaflets opposite, 3–6-pair, oval-oblong, obtuse. Panicles large, terminal, or in the axils of the uppermost leaves.

306. S. febrifuga *A. de J. Meliac.* p. 98. t. 26. *W. and A.* i. 122. — Cedrela febrifuga *Roxb. corom.* i. t. 17. *fl. ind.* ii. 398. *DC. prodr.* i. 625. Swietenia febrifuga *S. and C.* ii. t. 81. — Mountains of India.

A large forest tree. Leaves alternate, abruptly pinnated, in 3–4 pairs, about a foot long; leaflets opposite, ovate, obtuse or emarginate, unequal at the base, smooth, shining, 3–4 inches long by 2–3 broad. Panicle terminal, large, diffuse, smooth. Sepals 5, ovate, deciduous, Petals 5, ovate, obtuse, concave, spreading. Stamen-tube urceolate,

10-toothed; each tooth bifid; anthers 10, oval, arising from inside the tube below its crenatures. — Bark an efficient remedyfor the dangerous jungle fever of India, when Cinchona produces no effect. It has also been employed successfully in India in bad cases of gangrene, and in Great Britain in typhus fever, and as an astringent. (See *Duncan tentam. inaug. de Soymida*, 8vo. Edinb. 1794.)

CEDRELA.

Calyx short, 5-cleft. Petals 5, erect, keeled or plaited in the inside down the middle. Stamens and pistil on a common stalk. Disk adnate with the stalk, glandular, 5-ribbed, concrete between the ribs with the interposed plaits of the petals, 5-lobed. Filaments 10, inserted on the summit of the disk; the 5 alternate with the petals subulate, fertile; the other 5 very short, sterile or wanting. Ovary on the top of the stalk and disk, 5-celled: ovules 8–12 in each cell. Style short, deciduous: stigma peltate, obscurely 5-angled. Capsule 5-celled, 5-valved, dehiscing from the apex; valves separating from the persistent 5-angled axis by the dissepiments. Seeds pendulous, winged downward. — Leaves pinnated; leaflets opposite or nearly so, many-paired, unequal-sided. Panicles terminal, large, pyramidal. Parts of flowers occasionally quaternary and senary.

307. C. Toona *Roxb. corom.* iii. t. 238. *fl. ind.* i. 635. *DC. prodr.* i. 624. *A. de J. Meliac.* 103. *W. and A.* i. 124. — C. febrifuga *Blume Bijdr.* 199. *Forsten diss. de Cedrel. c. ic. opt.* — Bengal, Java.

Trunk erect, of a great size and height. Bark smooth, gray. Branches numerous, forming a large, beautiful shady head. Leaves alternate, abruptly pinnate, drooping, from 12 to 18 inches long. Leaflets in from 6–12 pairs, opposite, or nearly so, obliquely lanceolate, waved at the margins, smooth, tapering to a long acute point, quite entire, or slightly and distinctly toothed. Panicles terminal, nearly as long as the leaves, pendulous, divaricating, much branched, smooth. Bracts minute, deciduous. Flowers very numerous, small, white, fragrant like honey. Calyx 5-parted. Petals 5, oblong, ciliated, curved over the stamens, and keeled inside near the base. Hypogynous glands 5, large, hairy, orange-coloured; filaments erect, inserted into the centre of these, rather shorter than the petals. Ovary superior, oblong; stigma large, flat, 5-lobed. Capsule oblong, rather larger than a field bean, 5-celled, 5-valved; the valves opening from the apex and falling off with the seeds. Seeds numerous, imbricated, winged. — The bark a powerful astringent, and though not bitter, a tolerably good substitute for Peruvian Bark in the cure of remitting and intermitting fevers; particularly when joined with a small portion of the powdered seed of Cæsalpinia Bonduccella (Kutulegee of the Bengalese), which is a most powerful bitter. *Roxb.* The bark was used in Java by Dr. Blume, with much success in the worst epidemic fevers, diarrhœa, and other complaints; Horsfield also applied it in various cases of dysentery, but in the last stage, when the inflammatory symptoms had disappeared.

Forsten considers it especially useful in bilious fevers, and inveterate diarrhœa arising from atony of the muscular fibre.

CHICKRASSIA.

Calyx short, 5-toothed. Petals 5, erect. Stamen-tube cylindric-oblong, with 10 crenatures, each bearing 1 terminal exserted anther: ovary oblong, seated on a short disk of its own breadth, 3-celled: ovules numerous in each cell. Style thick, scarcely distinct from the ovary: stigma capitate, 3-lobed. Capsule ovoid, 3-celled, 3-valved, dehiscing from the apex, septifragal: the woody sarcocarp separating from the endocarp, and both from the large persistent axis, which is 3-winged by the dissepiments. Seed numerous, imbricated horizontally in a double row. — Leaves abruptly pinnated, occasionally bipinnate in luxuriant plants: leaflets nearly opposite. Panicles terminal. Flowers pretty large. Sometimes the number of parts of the flower is diminished by a fifth.

308. C. tabularis *A. de J. Meliac.* 99. *W. and A.* i. 123. — Plagiotaxis Chickrassa *Wall. cat.* 1269. Swietenia Chickrassa *Roxb. fl. ind.* ii. 399. — Mountainous country eastward from Bengal.

Leaves alternate, abruptly-pinnate, in luxuriant plants often bipinnate, from 6–18 inches long; leaflets nearly opposite, in from 2 to 10 pairs, subsessile, obliquely-ovate, with a pretty long tapering point, entire, smooth on both sides, increasing in size towards the apex of the leaf; petioles round, with here and there a small scabrous speck. Stipules none. Panicles terminal, erect, rather large. Flowers numerous. Bracts minute. Calyx inferior, small, 5-parted; the lobes spreading, linear, cuneate, slightly emarginate. Stamen-tube subcylindrical, rather shorter than the petals, striated; with 10 short antheriferous teeth. Anthers cordate. Ovary oblong, striated, a little hairy. Style just long enough to raise the large peltate stigma even with the mouth of the stamen tube. Capsule oval, somewhat pointed, scabrous, the size of a small pullet's egg, 3-celled, 3-valved, with double integuments, and a 3-winged placenta. Seeds numerous, winged and imbricated in a double series across the cells. — Bark powerfully astringent without bitterness. *Roxb.*

KHAYA.

Sepals 4, imbricated. Petals 4, spreading. Filaments 8, united in a ventricose tube, with 8 contorted teeth, having 8 anthers inside. Ovary 4-celled, with 16 ovules in each cell; stigma discoidal. Capsule globose, 4-celled, septifragal, with 4 woody valves separating from a 4-winged axis.

309. K. senegalensis *A. de J. Meliac.* 98. *Fl. senegamb.* i. 130. t. 32. — Swietenia senegalensis *Lam. dict.* iii. 679. *DC. prodr.* i. 625. — Borders of the Gambia, a common forest tree.

A large tree 80–100 feet high. Leaves equally pinnated; leaflets ovate-oblong, acute, undulated, leathery, entire, in about 3 pairs, smooth on both sides. Flowers numerous, in terminal and axillary panicles. Petals whitish. Capsule the size of a peach. — Bark very bitter, called Cail-Cedra, febrifugal. The Blacks use it in infusion and decoction, never in powder. Leprieur says it is called Karson Khayi, and employed as a remedy for the fevers so common in the damp districts of the Gambia. *Forsten*, p. 12.

310. Juribali or Euribali *Hancock in med. bot. trans.* 1834. p. 36.

A small tree. Leaves alternate, oblong, pointed, on short compressed channelled petioles; stipules often so much developed as to resemble the leaves, auriculate, rounded, obtuse, stalked. Panicles long, lax, divaricate. Calyx entire. Petals 4, lanceolate-ovate, white, spreading. Tube of the stamens campanulate, inflated, 8-toothed, with 8 anthers in its notches. Ovary obtusely conical, pubescent; style short; stigma capitate. Capsule ovate, 1-celled, 3-valved, containing a single seed, which is roundish and crowned with a trifid wing, arillate on one side only; it is veined, and resembles the nutmeg in shape, but is only half its size with a fleshy albumen and foliaceous cotyledons. — Bark a potent bitter and astringent; it appears to be far superior to Peruvian bark in fevers of a typhoid and malignant nature. It is cordial and purgative; and is also a powerful diaphoretic, especially if taken warm. *Hancock, l. c.* It is not known to what genus this belongs. The description given by Dr. Hancock is not sufficient to enable a botanist even to be certain that it belongs to either this order or the last.

HUMIRIACEÆ.

Nat. syst. ed. 2. p. 104.

HUMIRIUM.

Calyx 5-cleft. Petals 5. Fertile stamens 20; filaments monadelphous at the base; anthers with an appendage at the apex, and distant cells. Sterile stamens about half the number, surrounding the base of the ovary in the form of hypogynous scales. Stigma with 5 rays. Drupe with an 8-celled stone; of which the cells are 1-seeded, 4 cells being placed over the other 4.

311. H. floribundum *Mart. gen. and sp. pl.* ii. 145. t. 199. — Various parts of Brazil.

A tree 20—30 feet high. Branches slightly winged, purplish brown. Leaves alternate, obovate or oblong, obtuse, obscurely emarginated, narrowing into a very short petiole. Cymes axillary, on long stalks little shorter than the leaves. Flowers small. Calyx with rounded lobes. Petals white, erect, lanceolate, obtuse. Anthers fringed, with a tongue-shaped appendage much longer than the lobes. Hypogynous scales bifid, adhering into a toothed cup. Drupe 4–5 lines long, purple, with a soft sweet eatable flesh. — This plant, the *Umiri* of the people of Para, yields from its trunk when wounded a valuable, fragrant, limpid, pale yellow balsam called *Balsam of Umiri*, possessing the same medicinal qualities as Balsam of Copaiva, "immò nobiliorem et balsamo peruviano œmulum." *Martius.*

312. H. balsamiferum *Aubl.* 565. t. 225. — Myrodendron amplexicaule *Schreb. gen.* No. 901. — A Guiana plant, with ovate or ovate-oblong acute sessile half-amplexicaul leaves, yields a similar balsam, which Aublet compares to that of Peru; it is the *Houmiri* or *Touri* of the Caribs.

AURANTIACEÆ.

Nat. syst. ed. 2. p. 105.

BERGERA.

Flowers and carpels unsymmetrical. Calyx 5-cleft. Petals 5, spreading. Stamens 10: filaments distinct, subulate, compressed below: anthers ovate. Ovary oval, 2-celled; with one ovule in each cell, attached by its middle to the middle of the axis. Style long, thick. Fruit baccate, usually 1-celled and 1-seeded. Seed surrounded with mucilage: seed-coat membranous, glabrous: cotyledons glabrous, conspicuously auricled at their base: radicle villous. — A small tree with pinnate leaves. *W. and A.*

313. B. Konigii *Linn. mant.* 565. *Roxb. corom.* ii. t. 112. *fl. ind.* i. 375. *DC. prodr.* i. 537. *W. and A.* i. 94. — Mountainous coast of Coromandel.

A small tree, with the bark of an alder. Leaves stalked, unequally pinnate; leaflets alternate, short-stalked, ovate-lanceolate, rhomboidal, oblique, smooth or downy, somewhat serrated. Corymbs terminal, compound, shorter than the leaves, spreading. Bracts pressed close to the pedicels, small, solitary, lanceolate, deciduous. Flowers small white. — Bark and root used as stimulants by the native physicians of India; externally employed against the bites of poisonous animals; green leaves prescribed to be eaten raw in dysentery: also bruised and applied externally to cure eruptions. *Roxb.*

FERONIA.

Flowers often polygamous. Calyx flat, 5-toothed. Petals 5 (occasionally 4 or 6) spreading. Stamens 10: filaments dilated and united at the base: anthers linear-oblong, tetragonal. Ovary seated on the elevated disk, 5- (occasionally 6-) celled: ovules numerous in each cell. Style scarcely any. Stigma oblong. Fruit baccate, with a hard rind, 5-celled, many-seeded. Seeds immersed in a fleshy pulp. — Trees. Leaves pinnated: leaflets 5–7, nearly or quite sessile, obovate, very slightly crenulated, pellucid-dotted along the margin, inconspicuously so elsewhere; common petiole slightly winged. Racemes lax, few-flowered, terminal and axillary. *W. and A.*

314. F. elephantum *Corr. in Linn. trans.* v. 224. *Roxb. corom.* ii. t. 141. *DC. prodr.* i. 538. *W. and A.* i. 96. — Anisifolius *Rumph.* ii. t. 43. — East Indies. (Elephant- or wood-apple; Capittha *As. Res.*)

Branches armed with simple spines. Leaflets 5–7, small, obovate, smooth. When young very thin, when old firm, and almost coriaceous, common petiole with a narrow margin, jointed. Calyx teeth pink; petals paler; anthers crimson. Fruit fleshy, extremely acid before maturity, when ripe filled with dark brown agreeable subacid pulp, large, spheroidal, rugged, often warted externally, containing 5 parcels of roundish-oblong, flat, woolly seeds adhering to the branched placentæ, by means of long cords. — Both leaves and flowers exhale a powerful odour of Anise.

ÆGLE.

Flowers hermaphrodite. Calyx 4–5-toothed. Petals 4–5, spreading. Stamens 30–40; filaments distinct: anthers linear-oblong. Ovary 8–15-celled: ovules numerous in each cell; style very short and thick; stigma capitate. Fruit baccate, with a hard rind, 8–15-celled: cells 6–10-seeded. Seed-coat woolly, covered over with a slimy liquid. — Trees with simple spines. Leaves pinnate: leaflets 3, occasionally but very seldom 5, oblong or broad-lanceolate, crenulated, inconspicuously dotted, unequal, the terminal one the largest. Peduncles axillary, few-flowered: pedicels long. Flowers large. *W. and A.*

315. Æ. Marmelos *Corr. in Linn. trans.* v. 222. *Roxb. corom.* ii. t. 143. *fl. ind.* ii. 579. *DC. prodr.* i. 538. *W. and A.* i. 96. — Feronia pellucida *Roth. nov. sp.* p. 384. *DC. prodr.* i. 538. Cratæva Marmelos *Linn. sp. pl.* 637. (*Rheede* iii. t. 37. *Rumph.* i. t. 81.) — All parts of the East Indies. (Bilva or Mahura *As. res.*)

Trunk pretty erect. Bark ash-coloured. Branches few and irregular. Thorns axillary, in pairs, single, or none, very sharp and strong. Leaves ternate. Leaflets oblong, or oblong-lanceolate, attenuated to a bent point, crenulate, differing much in size, but the exterior one is always the largest. Panicles small, terminal, and axillary. Flowers large and white hermaphrodite. Calyx 4- or 5-toothed. Petals 4–5. Filaments about 40, short. Anthers linear, erect. Berry large, spheroidal, smooth, with a hard shell, and 10–15 cells, which contain besides the seeds, a large quantity of a tenacious transparent gluten, which on drying becomes very hard, but continues transparent; when fresh it may be drawn out into threads of 1 or 2 yards in length, and so fine as to be scarcely perceptible to the naked eye, before it breaks. Seeds from 6 to 10 in each cell, oblong, a little compressed, woolly, attached to the inner angle of their cell. — Fruit nutritious, warm, cathartic, delicious. Its aperient and detersive quality, and efficacy in removing habitual costiveness have been proved by constant experience. Root, bark, and leaves reckoned refrigerants by the Malabar physicians.

CITRUS.

Flowers usually in a quinary proportion. Calyx urceolate, 3-5-cleft. Petals 5–8. Stamens 20–60: filaments compressed at the base, and there more or less united and polyadelphous:

anthers oblong. Ovary many-celled: ovules 4–8 in each cell one above the other in a double row, pendulous. Style terete Stigma hemispherical. Fruit baccate, 7–9-celled: cells with several seeds, filled with a fleshy substance composed of numerous irregular pulpy bags or vesicles, which are mere cellular extensions of the sides of the carpels. — Trees or shrubs with axillary solitary spines. Leaves reduced to one terminal leaflet jointed with the apex of the petiole: petiole often winged.

Linnæus admitted but two species of this genus, the Citron and the Lemon; and no one knows what the real limits are between those additional species recognised by modern Botanists. They seem to have originated in the northern parts of India and in China where wild plants abound; but the latter are extremely different from those known in a cultivated state, and no better course seems to present itself than to follow the views of M. Risso, who has paid much attention to the classification of the species in Italy and whose distinctions are adopted by M. De Candolle. Dr. Hamilton indeed declares that the only distinct species in his opinion are the Shaddock on the one hand, and all the remainder on the other. But I think few persons would be disposed to believe in the identity of the Orange and the Lemon.

316. C. Aurantium *Risso ann. mus.* xx. 181. t. 1. f. 1 and 2. *DC. prodr.* i. 539. (The Sweet orange.)

Stem arborescent. Leaves ovate-oblong, acute, a little serrulated, with the stalk more or less winged. Flowers white. Fruit roundish, very seldom pointed, golden yellow or tawny. Cysts in the rind convex. Pulp sweet. — Leaves are feebly bitter and contain a volatile oil. They have been used, in the form of powder, or infusion, in spasmodic diseases. The young unripe fruit dried and turned in a lathe are the *issue peas* of the shops. The rind is a mild tonic and aromatic; large quantities are said to be sometimes productive of mischief. Juice refreshing in fevers. Orange flowers yield the officinal *oleum aurantii* or *Oil of Neroli*.

317. C. Bigaradia *Duham. ed. nov.* vii. 99. *Risso Orang.* p. 148. — C. vulgaris *Risso ann. mus.* xx. 190. *DC. prodr.* i. 539. C. aurantium *Bot. Reg.* t. 346. *S. and C.* i. t. 14. — (The Seville Orange.)

Branches spiny. Leaves elliptical, acute, with a winged stalk. Flowers very white. Fruit uneven, more or less globose, deep yellow, with an acid and bitter pulp. Tree smaller and flowers sweeter than in the sweet orange.— Rind of the fruit more bitter and tonic than that of the last species, and therefore more employed medicinally.

318. C. Limetta *Risso ann. mus.* xx. 195. t. 2. f. 1. *DC. prodr.* i. 539. — (The Lime.)

Leaves ovate, obovate and oblong, placed upon a wingless stalk. Flowers small and white. Fruit ovate or roundish, pale yellow, with a boss at the point. Cysts in the rind concave. Pulp subacid, flat, slightly bitter. — The fruit yields the *oil of bergamot* of the shops; it is used in medicine on account of its odour.

319. C. Limonum *Risso ann. mus.* xx. 201. *DC. prodr.* i. 539. — (The Lemon.)

Leaves ovate-oblong, usually serrulated, pale green, with a winged stalk. Flowers middle-sized, purple externally. Fruit oblong, very uneven, now and then almost round, with a pale yellow rind. Cysts in the rind concave. Pulp juicy, very acid. — Juice of the fruit yields citric acid; when properly diluted and slightly sweetened it is a most agreeable and refreshing beverage. The essential oil of the rind is recommended by Mr. Foote as a stimulant in various inflammations of the eye. *Med. bot. trans.* 1834. p. 79. The peel itself is aromatic and stomachic; but it does not agree with all stomachs.

SPONDIACEÆ.

Nat. syst. ed. 2. *p.* 106.

SPONDIAS.

Flowers sometimes unisexual. Calyx 5-cleft, coloured. Petals 5, oblong, spreading, somewhat valvate. Stamens 10, inserted on a crenated glandular disk. Styles 5, distant. Drupe crowned by the points left by the styles; with a 5-celled fibrous nut. Seeds by abortion solitary, without albumen; embryo straight, cotyledons fleshy; radicle inferior. — Trees with the leaves unequally pinnated, rarely simple. Racemes axillary, simple or panicled.

320. S. Mangifera *Pers. syn.* i. 509. *DC. prodr.* ii. 75. *Roxb. fl. ind.* ii. 451. — Sp. amara *Lam. dict.* iv. 245. Mangifera pinnata *Linn. suppl.* 56. Amarataca *As. res.* iv. 284. Ambalam *Rheede* i. t. 50. — Mountains of Coromandel.

Trunk straight, 1–2 feet in diameter. Bark smooth, ash-coloured, astringent. Branches nearly horizontal. Leaves alternate about the extremities of the branches, pinnate with an odd one, 12–20 inches long. Leaflets about 5 pairs, opposite, oval, pointed, entire, smooth, veined; 3–6 inches long, 2–2½ broad; petioles round, smooth. Stipules 0. Panicles terminal, very large, diffuse and thin. Flowers very numerous, small, white, mostly barren, though no male flower (apparently so) is to be found. Calyx small, 5-toothed. Petals 5, oblong, spreading. Disk a large, fleshy, notched ring surrounding the ovary. Filaments 10, subulate, alternately shorter, incurved, scarcely half the length of the petals; anthers small. Ovary ovate, 5-celled, with 1 pendulous ovule in each cell; styles 5, short, erect, distant. Stigmas simple. Drupe oval, fleshy, smooth, the size of a pullet's egg; when ripe, yellow. Nut oblong, woody, very hard, outwardly fibrous, 5-celled, but seldom more than 1, 2 or 3 of the cells produce seed. — Trunk when wounded yields large quantities of a mild insipid gum, exactly like gum Arabic. *Roxb.*

RHAMNACEÆ.

Nat. syst. ed. 2. *p.* 107.

ZIZYPHUS.

Calyx patent, 5-cleft. Petals obovate, unguiculate, convolute. Stamens exserted: anthers ovate, 2-celled, opening longitudinally. Disk flat, pentagonal, expanded, adnate to the tube of the calyx. Ovary 2–3-celled, immersed in the disk and adnate to it. Styles 2–3, diverging or combined. Fruit fleshy, containing a 1–2-celled nut. Seeds sessile, compressed, very smooth. — Shrubs or trees, with flexuose branches. Stipules usually thorny, sometimes caducous. Leaves alternate, 3-nerved. Cymes axillary, few-flowered, usually much shorter than the leaf, often sessile. *W. and A.*

321. Z. Œnoplia *Mill. dict.* No. 3. *DC. prodr.* ii. 21. *W. and A.* i. 163. — Z. Napeca *Roxb. fl. ind.* i. 613. not of *Willd.* — Common all over India.

Branches many, large, straggling, too weak to support themselves. Bark dark rust-coloured, pretty smooth; young shoots downy. Prickles stipulary, large, and exceedingly sharp, the lower one much recurved, the upper one straight. Leaves short-stalked, bifarious, very obliquely ovate, serrate, 3-nerved; downy underneath, from 1 to 2 inches long. Corymbs axillary, many-flowered. Style 2-cleft. Drupe the size of a pea, smooth, shining, black, marked round the base with a circular scar. Nut rugose, obcordate, 2-celled; one of the cells often obliterated. Seed solitary, erect. — The fruit is eaten by the natives; the taste is a very pleasant acid. A decoction of the bark of the fresh root is said to promote the healing of fresh wounds. *Roxb.*

322. Z. Jujuba *Lam. enc. meth.* iii. 318. *DC. prodr.* ii. 21. *Roxb. fl. ind.* i. 608. *W. and A.* i. 162. — Rhamnus Jujuba *Linn. sp.* 282. (*Rumph.* ii. t. 36. *Rheede* iv. t. 41.) — Various parts of the East Indies and China.

A small tree. Prickles short, often wanting. Leaves elliptical, or oblong, obtuse, sometimes with a few coarse teeth at the apex, rather sharp, or blunt, or slightly cordate; glabrous on the upper side, covered with a close short down on the under. Cymes sessile or very shortly stalked. Ovary 2-celled; styles 2, half combined. Drupe spheroidal; nut rugose, hard and thick, 2-celled. — From this and the next the pleasant pectoral lozenges called *Pâte de Jujube* are prepared when genuine. Bark employed in the Moluccas as a remedy for diarhœa.

323. Z. vulgaris *Lam. illustr.* t. 185. f. 1. *DC. prodr.* ii. 19. — Rhamnus Zizyphus *Linn. sp. pl.* 282. *Pall. fl. ross.* ii. t. 59. — Syria, Persia, Hindostan.

A tree about the size of an apple tree. Prickles absent, or in pairs, one of them being recurved. Leaves ovate, retuse, toothletted, quite smooth as well as the branches. Flowers green, axillary, 3–5 together, on short stalks. Drupe oblong, the size of an olive, dull red, with a soft mealy pulp.

BERCHEMIA.

Calyx 5-cleft, with a hemispherical tube; segments erect. Petals 5, convolute. Stamens inclosed within the petals; anthers ovate, 2-celled. Disk fleshy, annular, flattish. Ovary half immersed in the disk but free from it, 2-celled; style short, bifid at the apex; stigmas convex. Fruit drupaceous, with a bony 2-celled nut. Seed-coat fibrous, closely adhering above and on the side next the axis to the putamen, free below and on the outer side. — Erect or climbing shrubs. Leaves alternate, many-nerved: nerves oblique, almost simple, pretty close to each other. Flowers in short corymbs or umbels from the axils of the upper leaves, or nearly sessile and fascicled along slender leafless branches, which form a terminal panicle. *W. and A.*

324. B. volubilis *D C. prodr.* ii. 22.—Œnoplia volubilis *R. and S.* v. 332. Rhamnus volubilis *Linn. suppl.* 152. *Jacq. ic.* t. 336. — In Carolina and Virginia.

A twining shrub, with a stem not thicker than a quill. Leaves elliptical, stalked, rounded at the base, rounded and acuminate at the point, smooth on each side, shining on the upper side, with strong parallel pinnated veins. Flowers small, in short terminal racemes. Calyx greenish; petals white. Drupe oblong, black, 1-celled. — Roots prescribed in cachectic disorders; said to be antisiphilitic.

CEANOTHUS.

Calyx 5-cleft, campanulate, cut round after flowering, with the base permanent and adhering to the fruit. Petals hooded, with long spreading claws. Fruit dry, 3-celled, loculicidal, with papery valves; cells 1-seeded. — Spineless shrubs.

325. C. americanus *Linn. sp. pl.* 284. *Bot. Mag.* t. 1479. *Mill. ic.* t. 57. *DC. prodr.* ii. 31. — United States of America.

A small bush. Leaves ovate, acuminate, serrated, 3-nerved, downy on the under side. Flowers white in long thyrses; with a downy axis. Fruit bluntly 3-cornered.— An infusion of the twigs has been named as useful, on account of its astringency, to stop gonorrhœal discharges; its root is said to be antisiphilitic.

RHAMNUS.

Calyx urceolate, 4-cleft. Petals either wanting or 5; either nearly flat, or slightly convolute and emarginate at the apex.

Stamens with ovate 2-celled anthers. Torus thin, lining the tube of the calyx. Ovary free from the calyx, and not immersed in the torus, 2–3–4-celled. Styles 2–4, more or less connected or distinct. Fruit fleshy, containing 2–4 indehiscent cartilaginous nuts; one of them occasionally abortive. — Shrubs or small trees. Leaves alternate or rarely opposite, stipuled, short-stalked, feather-nerved. *W. and A.*

326. R. catharticus *Linn. sp. pl.* 279. *Eng. Bot.* t. 1629. *Woodv.* t. 114. *DC. prodr.* ii. 24. *S. and C.* t. 119. — Hedges and woods throughout Europe. (Buckthorn.)

Branches alternate, or nearly opposite, spreading, straight, round, smooth, hard, and rigid, each terminating in a strong spine, after the first year. Leaves deciduous, bright green, smooth, ribbed; the young ones downy: the earlier ones in tufts from the flowering buds; the rest opposite, on the young branches. Footstalks downy. Stipules linear. Flowers yellowish-green, on the last year's branches, numerous; the fertile ones with narrow petals, rudiments of stamens, and a deeply 4-cleft style; barren ones with an abortive ovary, and broader petals. Berries globular, blueish-black, nauseous, with 4 cells, and as many seeds; by which last character they are easily known, by druggists, from the fruit of R. Frangula, which is supposed to be less active. The unripe berries dye yellow. *Smith.* — Fruits violently purgative, but produce colic; they are powerful hydragogue cathartics, 15 or 20 causing abundant evacuation: only given in some kinds of dropsy. The syrup usually prescribed in doses of 1 to 2 ounces.

327. R. Frangula *Linn. sp. pl.* 280. *E. Bot.* t. 250. or Black Alder, a common wild shrub, has emetic fruit.

328. R. infectorius *Linn. mant.* 49. *DC. prodr.* ii. 24. — (*Clus. hist.* i. 111. *ic.*) — Wild places in the South of Europe, among rocks.

A dwarf shrub, with a tough woody root; branches much entangled, procumbent. Flowers and leaves all out of the same bud. Leaves ovate-lanceolate, short-stalked, smooth; with very narrow, subulate, deciduous stipules. Flowers small, always unisexual, each on a long slender stalk. Calyx yellowish green, tubular, half 4-cleft. Petals 4, of the same colour, very narrow, half bifid. Fruit black, obovate, 2–3-celled, 2–3-seeded. — The unripe fruit is dried and sold under the name of French berries, or Graines D'Avignon; it is used for dying Maroquin leather yellow, and is purgative like R. Frangula.

329. R. saxatilis *Linn. sp. pl.* 1671. *Jacq. austr.* t. 53, a nearly allied species, with more erect branches, or more probably a mere variety, has similar properties; so have

330. R. amygdalinus *Desf. atl.* i. 198.

331. R. oleoides *Linn. sp.* 279.

332. R. buxifolius *Poir. dict.* iv. 463.

333. R. pubescens *Poir. dict.* iv. 464.

BURSERACEÆ.

Nat. syst. ed. 2. p. 110.

PROTIUM.

Flowers polygamous. Calyx campanulate, 4-toothed, persistent. Petals 4, linear-oblong, inserted under the margin of the torus; æstivation valvular, the margin curved in. Stamens 8, shorter than the corolla, glabrous, inserted under the margin of torus. Torus cup-shaped, fleshy, deeply crenated. Ovary sessile, 2-celled; ovules 2 in each cell, collateral, suspended from the middle of the axis. Style very short: stigma obtuse, 4-lobed. Drupe globose or ovate; nut thick and very hard, bony, 2-celled (one of the cells by abortion often obliterated,) at length divisible into 2 nuts. Seed solitary in each perfect cell. — Trees giving out balsam. Leaves unequally pinnated: leaflets 3–7, without dots. *W. and A.*

334. P. gileadense *W. and A.* i. 177.—Balsamodendron Gileadense *DC. prodr.* ii. 76. Amyris gileadensis *Linn. mant.* 65. *Vahl. symb.* i. 28. t. 11. Amyris Opobalsamum *Forsk. descr.* 79. Βαλσαμον δενδρον *Theoph.* Βαλσαμον *Dioscorides.* — Arabia; neighbourhood of the Caravanserai of Oude, not far from Hæs *Forsk.* East Indies *Wight.* Beder in Ethiopia *Bruce.*

A middle-sized tree, with divaricating branches and a smooth ash-coloured bark. Leaves ternate; leaflets smooth, flat, entire, the lateral ones ovate, the middle ones obovate. Flowers monœcious. Peduncles solitary or several together, terminal, filiform, 1-flowered. Calyx campanulate, 4-toothed. Petals 4, linear, erect, obtuse. Stamens 8, shorter than the corolla. Disk annular, cup-shaped, fleshy, with an elevation on the outside between each stamen. Fruit fleshy, ovate, acute, smooth, with 4 sutures, 1–2-celled, with a tenacious viscid pulp. Seed solitary. — The wounded bark yields *opobalsamum* according to Forskal. This, which is also called *Balsam of Mecca*, is reckoned by the Orientals a perfect panacea; being according to them stomachic, vulnerary, alexipharmic, &c. &c. According to Prosper Alpinus its different qualities depend upon its mode of preparation. I have taken up an abridgment of Forskal's account of this plant; but it is thought by some that the Indian and Arabian species may be different. A supposed variety from Mecca is mentioned with bipinnate leaves.

335. P. Kafal.— Amyris Kafal *Forsk.* 80. Balsamodendron Kafal *Kunth. gen. tereb.* 16. *DC. prodr.* ii. 76. — Arabia.

Young leaflets villous, acute, serrated at the point, old ones smooth, often obtuse. Branches slightly spiny. Fruit compressed, with an elevated ridge on each side, and a black prominent point at the apex. — A very fragrant balsam is obtained from the fruit of this tree. The gum resin is purgative. *Forsk.*

336. P. Kataf. — Amyris Kataf *Forsk.* 80. Balsamodendron Kataf. *Kunth* l. c. *DC. prodr.* ii. 76. Balsamodendron Myrrha *N. and E. handb.* iii. 122. *Pl. med.* t. 357. — Arabia, near Beit el fakih; Gison on the borders of Arabia Felix.

A white-wooded tree without spines. Leaflets ternate, blunt or acute, serrated at the end. Peduncles corymbose at the ends of the branches, filiform, for the space of an inch simple, afterwards dichotomously branched. Teeth of calyx lanceolate, the length of the tube. Fruit globose, with a depressed umbilicus at the point, *Forsk.* short-stalked, smooth, brown, ovate, rather larger than a pea, *N. and E.* — According to Ehrenberg this is the plant that yields *myrrh*, which exudes from the bark, like gum from the bark of a cherry tree; it promotes the appetite, creates an agreeable warmth in the stomach, and occasions slight constipation.

It is supposed that the *Indian Bdellium*, a gum resin resembling Myrrh, is obtained from some tree of this genus. For *African Bdellium* see Heudelotia africana.

CANARIUM.

Flowers polygamous-diœcious. Calyx campanulate, 3-lobed; lobes unequal. Petals 3, inserted under the disk, twice as long as the calyx, oblong, concave: æstivation imbricative. Stamens 6, inserted under the disk, shorter than the petals, unequal. Torus an urceolate disk at the bottom of the calyx. Ovary sessile, ovate-globose, 3-celled. Style very short, or wanting. Stigma 3-lobed. Fruit a drupe: sarcocarp thin, somewhat fleshy: nut very hard, 3-angled, 3-celled (2 of the cells often abortive). Seed solitary in each perfect cell. Cotyledons intricately folded, deeply 3-cleft. — Trees. Leaves unequally pinnated, upper ones with large deciduous stipules. Flowers panicled bracteolated. *W. and A.*

337. C. commune *Linn. mant.* 177. *Konig. in ann. bot.* i. 260. t. 7. f. 2. *Roxb. fl. ind.* iii. 137. *DC. prodr.* ii. 79. *W. and A.* i. 175. — Amyris zeylanica *Retz. obs.* iv. 25. Balsamodendron zeylanicum *DC. prodr.* ii. 76. Colophonia mauritiana *DC. prodr.* ii. 79. Bursera paniculata *Lam. encycl.* ii. 768. — Continent of India; Indian Archipelago and islands. (Bois de Colophane in the Isle of France.)

A small tree. Leaflets 7–11, on long stalks, ovate-oblong, acute or shortly acuminated, quite entire, smooth; stipules oval. Panicle terminal, divaricating. Flowers 2–3 together, almost sessile, when young covered over by broad ovate concave silky bracteolæ. Calyx externally silky. Drupes oblong, black. — The bark yields an abundance of limpid oil, with a pungent turpentine smell, congealing in a buttery camphoraceous substance; it has the same properties as balsam of copaiba. Raw fruit eatable, but apt to bring on diarrhœa. Said to yield *East Indian Elemi.*

BURSERA.

Flowers polygamous. Calyx small, 3–5-parted, with obtuse lobes. Petals 3–5, spreading, valvate. Stamens 6–8. Annular disk, with about 8 crenatures. Ovary ovate, 3-celled; style short trifid. Drupe oblong, with 3 stones of which 2 are abortive; a succulent 3-valved rind.— American balsamiferous trees, with unequally pinnated or simple leaves. Racemes axillary and terminal.

338. B. acuminata *Willd. sp. pl.* iv. 1120. *DC. prodr.* ii. 78. — Porto Rico and St. Domingo.

Leaflets oblong, acuminate, acute at the base. Racemes axillary. — A yellow concrete essential oil is yielded by this plant. *Royle.*

339. B. gummifera *Jacq. amer.* 94. t. 75. also abounds in a turpentine-like secretion which hardens as it dries. This plant is found in Cuba, St. Domingo, Jamaica and on the adjoining continent, and appears to be not very different from the last.

BOSWELLIA.

Flowers bisexual. Calyx small, 5-toothed, persistent. Petals 5, obovate-oblong, very patent, acute at the base, inserted under the margin of the disk: æstivation slightly imbricative. Stamens 10, inserted under the disk, alternately shorter: filaments, subulate, persistent: anthers caducous. Torus a cup-shaped disk, fleshy, larger than the calyx, crenulated on the margin. Ovary oblong, sessile. Style 1, the length of the stamens, caducous. Stigma capitate, 3-lobed. Fruit capsular, 3-angled, 3-celled, 3-valved, septicidal: valves hard. Seeds solitary in each cell, surrounded by a broad membranaceous wing. Cotyledons intricately folded, multifid. — Trees producing balsam and resin. Leaves deciduous, alternate towards the top of the branches, unequally pinnated: leaflets opposite, serrated. Stipules none. Racemes terminal or axillary. Flowers on short pedicels, white. *W. and A.*

340. B. thurifera *Colebr. in As. research.* ix. 317. and xi. 158. *Roxb. fl. ind.* ii. 383. *W. and A.* i. 174.—B. serrata *S. and C.* iii. t. 147. *Pereira in med. gaz.* xx. 676. Λιβανος *Dioscorid.* — Mountainous parts of Coromandel, Bundulkund, &c.

Leaflets oblong, obtuse, serrated, pubescent. Racemes axillary, single, shorter than the leaves. *W. and A.* — Resin is called *Olibanum;* chiefly used as an incense in Indian temples, but also stimulant, astringent, and diaphoretic. Prescribed by the native Indian doctors, mixed with clarified butter, in gonorrhœa and bloody flux.

ICICA.

Calyx small, obtusely 5-toothed. Petals 5, inserted under the disk, recurved, sessile, valvate. Stamens 10, inserted with

the petals and shorter than them. Disk cup-shaped, 10-crenated at the margin. Ovary sessile, 5-celled: ovules 2 in each cell, collateral, pendulous. Style very short. Stigma 5-angled. Drupe globose, obtuse, 1–3-celled, the dissepiments (when present) thick and fleshy; sarcocarp coriaceous, splitting into valves: nuts (seeds?) bony, very hard, solitary in each cell, covered with an adhering arilliform fibrous pulp, marked externally with a depression or hilum, swollen internally opposite to the hilum or point of attachment of the placenta. Cotyledons foliaceous, thin, intricately folded and chrysaloid: radicle superior, cylindrical, thick. — Trees, producing resin or balsam. Leaves unequally pinnated, not dotted. Stipules none. Racemes or panicles axillary. Flowers small, white, or yellowish-brown. *W. and A.* chiefly.

341. I. heptaphylla *Aubl. guian.* i. 337. t. 130. *Hancock in med. gaz.* xx. 196. *DC. prodr.* ii. 77. — Amyris ambrosiaca *Willd. sp. pl.* ii. 335. — Woods of Guiana.

A good sized tree. Leaves alternate, unequally pinnated; leaflets in 2 or 3 pairs, ovate, acuminate, smooth, entire. Flowers axillary, corymbose. — The trunk yields a liquid limpid resinous fragrant substance, which according to Dr. Hancock is a valuable remedy for coughs; it hardens into a whitish resin. This writer gives *Hyawa* or *Haiawa* for the native name; according to Aublet it is *Arou aou* with the Caribs.

342. I. Aracouchini *Aubl.* l. c. i. 345. t. 133. *N. and E. handb.* iii. 128. — I. heterophylla *DC. prodr.* ii. 77. — Woods of Guiana, near the source of the river Courou.

A small tree. Leaves ternate or unequally pinnated with 5 pairs; leaflets ovate, smooth, entire. Fruit in axillary and terminal racemes, somewhat shorter than the leaves. Fruit greenish, with 2–3–4 coriaceous valves, enclosing a white sweet pulp which divides into 2–3–4 lobes each enveloping an angular stone. — The wounded branches yield an abundance of a yellowish, balsamic, aromatic liquid of a terebinthinous nature, which preserves its fluidity a long time, and constitutes the *Balsam of Acouchi*. The Caribs esteem it highly as a vulnerary.

343. I. Icicariba *DC. prodr.* ii. 77. *N. and E. handb.* iii. 126. — Amyris ambrosiaca *Linn. f. suppl.* 216? — Brazil.

Leaflets 3–5, short-stalked, oblong, acuminate. Flowers clustered in the axils, subsessile. — The fragrant fennel-scented resin of Brazil called *Elemi* is said to be produced by this tree, of which however little appears to be known. De Candolle says *Resin of Coumia* comes from it; but I do not find such a substance in books.

344. I. Carana *HBK. nov. gen.* vii. 34. with trifoliolate and pinnate leaves, and oblong acuminate smooth leaflets, shining on the upper, white and mealy on the under side, found in the missions of the Oronoco, yields the fragrant balsamic substance called *Caranna*, according to most writers. Dr. Hancock is

however of opinion that the Aniba of Aublet or Cedrota of Schreber, the affinity of which is unknown, really produces it.

345. I. Tacamahaca *HBK.* vii. 33. *DC. prodr.* ii. 77. with 5 elliptical oblong shining coriaceous acuminate leaflets, axillary panicles 3 times shorter than the petiole, and octandrous flowers; common near Calabozo in los Llanos; produces one of the bitter resins called *Tacamahaca.*

346. Another supposed species of this genus is the *Copal* of the Mexicans of Papantla and Misantla. *Linnæa* v. 601.

ELAPHRIUM.

Calyx 4-parted, deciduous. Petals 4. Stamens 8, length of calyx. Style 1, short. Stigma bifid. Capsule roundish, 1-celled, 1-seeded. Seed covered by pulp. — Trees with alternate, unequally pinnated leaves.

347. E. tomentosum *Jacq. amer.* 105. t. 71. *figs.* 1, 2, 3. *DC. prodr.* i. 723. *N. and E. handb.* iii. 130. — Fagara octandra *Linn. mant.* 40. — Rocky places in Curaçao and the neighbouring islands.

An inelegant tree about 20 feet high. Leaves downy on each side; leaflets in about 4 pairs, ovate, obtuse, crenated, hardly an inch long. Racemes crowded, terminal, simple, 1–1½ inch long. Flowers small, yellowish. Fruit the size of a pea, distilling balsam when the valves separate. Seed black, partly enclosed in a scarlet pulpy aril. — The tree abounds in a fragrant, balsamic, glutinous resin, which is believed to furnish one of the sorts of *Tacamahaca.*

348. E. excelsum *HBK.* vii. t. 611. a Mexican plant very nearly related to the last, is also stated to produce a similar substance.

? COMMIPHORA.

Calyx 4-toothed. Petals 4. Stamens 8; with 8 glands alternating with the filaments. Berry drupaceous, with a 2-celled 2-seeded stone.

349. C. madagascarensis *Jacq. hort. schönb.* ii. 66. t. 249. — Amyris Commiphora *Roxb. fl. ind.* ii. 244. — Silhet, Assam, Madagascar.

Trunk of small trees crooked, and clothed with many spreading and drooping, crooked branches down to the ground; branchlets often ending in thorny points. Bark of the young shoots green and smooth, that of the larger branches, and trunk, covered with a light coloured pellicle as in the common birch. Leaves alternate, petioled, oval, or elliptic, serrulate, smooth on both sides; at the base or apex of the petiole on each side, is generally found a small leaflet tending to give the whole the appearance of a ternate leaf. Flowers short-stalked, small, red, collected in little bundles on the small protuberant buds left

by the former year's leaves. Disk consisting of 8 glands alternate with the insertion of the filaments. Berry drupaceous, the size of a black currant, red, smooth. Nut 2-celled, with a single seed in each cell.—The whole plant very odoriferous, with a fragrance resembling that of Myrrh; but not the myrrh of commerce. Certainly not a Caoutchouc tree as Jacquin asserts. *Roxb.* Produces *Indian Bdellium*, a substance resembling myrrh, according to Professor Royle. See Heudelotia. *Guggul* or *Bengal Elemi* according to Guibourt. (ii. 540.)

I have not seen this plant, and it is still very incompletely described. I presume however there can be little doubt of its belonging to this natural order.

EUPHORBIACEÆ.

Nat. syst. ed. 2. p. 112.

BUXUS.

Flowers monœcious, clustered or racemose. Sepals 4, bracteate. ♂. Stamens 4. ♀. Styles and stigmas 3. Capsule 3-horned, tricoccous, 6-seeded. *A. de J.*

350. B. sempervirens *Linn. sp. pl.* 1394. *E. Bot.* t. 1341. — Dry chalky hills in Europe and the west of Asia.

A small dense-leaved, hard-wooded, evergreen tree. Leaves ovate, deep shining green, becoming red in the autumn, quite smooth and entire, with the cuticle of the under side readily stripping off; petioles and young branches slightly downy. Flowers aggregate, axillary, pale yellow. Capsule globular, bursting elastically. Seeds parallel, oblong, slightly compressed, externally rounded. — Leaves bitter and nauseous; sudorific and purgative. Chips of the wood have the same properties, and have been prescribed in syphilitic diseases and chronic rheumatism. A fœtid empyreumatic oil, *Oleum Buxi*, was formerly sold in the shops; but for all the purposes of box-oil, preparations of Guaiacum are now employed in preference. The oil has been occasionally employed with success in tooth ache. Camels are poisoned by browsing on the leaves in some parts of Persia.

CICCA.

Flowers monœcious or dicœcious. Calyx 4-parted. ♂. Stamens 4. ♀. Styles 4–5, bifid. Capsule somewhat fleshy, with 4–5 cocci, and 8–10 seeds.

351. C. disticha *Willd.* iv. 332. — Phyllanthus longifolius *Jacq. h. schönb.* ii. t. 194. *Roxb. fl. ind.* iii. 673. (*Rheede* iii. t. 47. 48. *Rumph.* vii. t. 33. f. 2.) Averrhoa acida *Linn. sp. pl.* 613. — Islands of India. (Cheramella of Europeans.)

A small tree. Leaves pinnated 1–2 feet long, often flower-bearing; leaflets numerous, alternate, stalked, nearly orbicular, 1–3 inches long, 1–1½ broad; petioles round, smooth, tapering, sometimes ending in a short raceme of male flowers. Racemes numerous, terminal, axillary and from the old buds on the naked branches. Flowers numerous, small, reddish, in globular beads. Drupe 3–4-lobed, 4–6–8-grooved, the size of a gooseberry. Nut (according to Roxb.) 3–4-parted, each part 1-celled and 1-seeded, which is at variance with the character assigned to the genus by A. de J. — Leaves sudorific, seeds cathartic. Fruit subacid, cooling and wholesome.

EMBLICA.

Flowers monœcious. Calyx 6-parted. ♂. Stamens 3, combined. ♀. Styles 3, dichotomous. Fruit fleshy, 3-coccous, 6-seeded. *A. de J.*

352. E. officinalis *Gærtn.* ii. 122. — Phyllanthus Emblica *Linn. sp. pl.* 1393. Myrobalanus Emblica *Bauh. pin.* 445. *Rumph.* vii. p. 1. t. 1. (Nilicamaram *Rheede* i. t. 38.) — Most parts of India.

Trunk generally crooked, when large as thick as a man's body. Branches thinly scattered in every direction; male branches spreading and drooping. Bark ash-coloured, scabrous. Leaves alternate, spreading, bifarious, pinnate, flower-bearing, 1–2 feet long, and about 1½–2 inches broad; leaflets very numerous, alternate, linear-obtuse, entire, smooth, about ¾ inches long, and ⅛ broad; petioles striated, round. Stipules small, withering. Flowers minute, greenish yellow. ♂ very numerous in the axils of the lower leaflets, and round the common petiole below the the leaflets, peduncled. Calyx 6-parted. Anthers 3–5 surrounding the upper part of a columnar filament. ♀ few, solitary, sessile, mixed with some males in the most exterior axils that bear flowers. Calyx as in the male. Disk cup-formed, embracing half the ovary, border ragged. Ovary superior, ovate. Style scarcely any. Stigmas 3, 2-cleft. Drupe fleshy, globular, smooth, 6-striated. Nut obovate, obtusely triangular, 3-celled. Seeds 2 in each cell. — Bark used in India in diarrhœa. Fruit extremely acid and astringent; when dry a mild purgative.

PHYLLANTHUS.

Flowers monœcious or diœcious. Calyx 5–6-parted. ♂. Stamens 3, seldom more, united at base. ♀. Styles 3, bifid. Capsule 3-coccous, 6-seeded. *A. de J.*

353. P. Niruri *Linn. sp. pl.* 1392. *Roxb. fl. ind.* iii. 659. — Urinaria indica *Burm. zeyl.* t. 93. — A common weed in Indian gardens and waste places.

Root annual. Stem erect, from 1 to 2 feet high, round, smooth. Branches numerous in large plants, the lower spreading to a considerable extent. Leaves scattered, spreading, pinnate, 1–3 inches long, flower-bearing. Leaflets alternate, bifarious, nearly sessile, oval, smooth; about ⅛ inch long, and ¼ broad. Stipules of the petiole 3-fold, forming a 3-toothed cup round their insertion, each tapering to a fine point; those of the leaflets similar, but 1 on each side. Flowers axillary to the leaflets, generally 1–2 male, and 1 female, on short stalks. ♂. Disk small, saucer-shaped, 6-toothed. Stamens, 1 short, columnar filament and 3 pairs of anthers. ♀. Calyx and disk as in the male. Capsules smooth, umbilicated, opening with an elastic jerk, 3-celled, 6-valved; cells 2-seeded. — Root bitter and astringent; when fresh employed successfully in Jaundice. Half an ounce rubbed in milk and given night and morning completed a cure, according to Dr. John, in a few days, without any sensible operation of the medicine. *Roxb.* Root, leaves and young shoots deobstruent, diuretic and healing. Leaves very bitter and a good stomachic. *Ainslie.* A decoction of the

bruised herbage and seed a specific against diabetes, according to Martius; who says it is called *Erva Pombinha* in Brazil.

354. P. urinaria *Linn. sp. pl.* 1393. *Roxb. fl. ind.* iii. 660. — Herba mæroris rubra *Rumph.* vi. t. 17 f. 1. Tsjeru Kirganeli *Rheede* x. t. 16. — Common in India, growing under the shade of trees.

Young plants of a deep dull dark red colour. Leaflets linear-oblong. Flowers all sessile. Capsule scabrous, 3-celled, 6-valved. Otherwise like P. Niruri. — A powerful diuretic.

355. P. simplex *Retz. obs.* v. 29. *Roxb. fl. ind.* iii. 654. — Dry cultivated ground in the East Indies.

Root frequently perennial. Stem somewhat woody. Branches numerous, diverging from the base of the little stem, spreading closely to the earth, with their apices ascending, many times longer than the stem, striated from the insertions of the leaves, which gives them a compressed appearance. Leaves simple, alternate, spreading, bifarious, sessile, linear-lanceolate, smooth, entire; about $\frac{3}{4}$ inch long, and $\frac{1}{4}$ broad. Stipules 2, obliquely cordate, withering. Flowers, male and female mixed, axillary, generally from 1 to 3 of each. Females long-stalked. Males nearly sessile. Three distinct filaments united at the base. Disk of the female with 12 notches. — Fresh leaves, flowers and fruit mixed with equal parts of cumin seeds and sugar and made into an electuary are administered by the natives of India, in doses of a tea-spoonful a day in cases of gonorrhœa. Fresh leaves bruised and mixed with buttermilk make a wash to cure the itch in children. *Roxb.*

356. P. virosus *Willd. sp. pl.* iv. 578. *Roxb. fl. ind.* iii. 659. — Forests and mountains of India.

Trunk erect. Branches numerous, ascending; branchlets bifarious. Leaves simple, alternate, bifarious, short-petioled, oval, entire, smooth, 1–2 inches long, and from $\frac{1}{2}$ to 1 inch broad. Stipules minute. Flowers very small, diœcious, axillary, crowded, short-stalked, when in flower erect. ♂. Calyx 5-leaved; sepals oblong, concave. Disk 5 yellow glands surrounding the base of the style and alternating with 5, spreading filaments. Pistil a style-like column with a stellate top. ♀. Calyx as in the male. Disk a 5-sided ring surrounding the base of the ovary. Styles 3. Stigma 2-cleft. Berry the size of a pea, covered with a white, fleshy pulp, 3-celled. Seeds 2 in each cell. — Bark a strong astringent, intoxicating fish when thrown into water.

CLUYTIA.

Flowers diœcious. Calyx 5-parted. Petals 5. ♂. Stamens 5, united into the stalk of an abortive pistil. ♀. Styles 3, bifid. Capsule 3-celled, 3-seeded. *A. de J.*

357. C. collina *Roxb. corom.* ii. 36. t. 169. *fl. ind.* iii. 733. — Hilly parts of the Circars of India.

Leaves alternate, short-stalked, bifarious, the smaller ones orbicular, the larger obovate, entire, smooth, shining. Stipules small, acute, hairy, deciduous. Flowers short-stalked, middle sized, green, monœcious, intermingled or separate, or diœcious, axillary. Bracts several,

very minute. ♂. Calyx 5-parted; divisions tapering, withering. Petals 5, very minute, lanceolate. Disk saucer-shaped. Stamens adhering to a columnar abortive pistil, from which, near the apex, there issue 5 ascending filaments. Anthers oblong, erect. ♀. Calyx and corolla as in the male. Disk cup-formed, closely embracing half the ovary, slightly notched at the edge. Styles 3, each 2-cleft; stigmas simple. Capsule somewhat 3-lobed, smooth, very hard, 3-celled, 6-valved, the size of a nutmeg. Seeds solitary, round, smooth, of the sizeof a pea.—Rind of the capsule reputed to be exceedingly poisonous.

BRIEDELIA.

Flowers monœcious. Calyx 5-cleft. Petals 5, minute. ♂. Stamens 5, united into the stalk of an abortive pistil seated upon a disk lining the base of the calyx. ♀. Styles 3, bifid. Ovary surrounded by a 5-cleft tube. Fruit fleshy, 2-celled, 2–4-seeded. *A. de J.*

358. B. spinosa *Willd. sp. pl.* iv. 979. *Roxb. fl. ind.* iii. 735. — Cluytia spinosa *Roxb. corom.* ii. 38. t. 172. — Circar mountains of India and various parts of Bengal.

Trunk straight. Branches numerous, spreading. Thorns a few over the larger branches, large and strong. Leaves alternate, oblong, pointed, entire, firm, smooth, strongly veined, about 5 inches long, and 2½ broad. Spikes axillary or terminal, clustered; flowers in interrupted parcels, small, greenish yellow, male and female mixed. ♂. Calyx 5-parted, withering. Petals 5, minute, orbicular, crenulate. Disk double, the exterior saucer-shaped; the interior cup-shaped, sitting on the exterior, and divided to near the base, into 5 segments; divisions narrowing towards the point, with the extremities 3-toothed. Filaments 5, inserted into an erect column. ♀. Calyx and corolla as in the male. Disk surrounding the ovary entirely, and leaving only a small opening for the styles to pass through, and there 5-toothed. Styles 2, bifid. Stigmas simple. Berry globular, of the size of a pea, succulent, black. Seeds 2.—Bark a powerful astringent. Leaves eaten by cattle; said to destroy worms in their bowels. *Roxb.*

CROZOPHORA.

Flowers monœcious. ♂. Calyx 5-parted. Petals 5. Stamens 5–10, with unequal connate filaments. ♀. Calyx 10-parted. Petals 0, styles 3, bifid. Capsule 3-coccous. *A. de J.*

359. C. tinctoria *A. Juss. Euphorb.* 27. *Nees gen. pl. eur. c. ic.* — Croton tinctorium *Linn. sp. pl.* 1425. — Basin of the Mediterranean.

A small hoary annual, all covered with stellate hairs. Leaves ovate-rhomboidal, repand, toothed, plaited and curled at the edges, tapering gradually to a stalk which is nearly as long as themselves. Flowers monœcious, in axillary racemes, the upper male, the lower female Maes subsessile, crowded, erect. Calyx 5-parted, conical, smooth inside. Stamens 5 or more, united in a column. Females on long, drooping, 1–3-flowered stalks. Calyx 10-parted, spreading, with

subulate segments. Capsule sound, leprous with starry scurf, tricoccous. Seeds somewhat angular. — An acrid plant, with emetic, drastic, corrosive properties. Its seeds, ground into powder and mixed with oil, are employed as a cathartic medicine. It is cultivated for the deep purple dye called *Turnsole* which is obtained from it.

CROTON.

Flowers monœcious or very rarely dicœcious. Calyx 5-parted. ♂. Petals 5. Stamens 10 or more, distinct. ♀. Petals 0. Styles 3, divided into 2 or more partitions. Capsule tricoccous. *A. de J.*

360. C. Cascarilla *Linn. sp. pl.* 1424. *Willd.* iv. 531. — C. lineare *Jacq. amer.* 256. t. 162. f. 4. (*Sloane* i. t. 86. f. 1.) — West India islands; Jamaica, St. Domingo.

Young branches covered with a fine close scaly yellowish down, which disappears with age. Leaves ¾ to 1½ inch in length, variable in breadth, linear, quite entire, obtuse at each end, mucronate at the point, quite smooth on the upper side, closely covered with a fine silvery or yellowish scaly down on the under side, with 2 or 3 glands at the base, very much hidden by the fur. Flowers dicœcious, in short dense terminal downy spikes, about the size of common shot. — The bark called *Cascarilla*, a most valuable bitter, aromatic, tonic stimulant, abounding in volatile oil, is by some believed to be produced by this tree, which occurs in a part of the West India islands: St. Domingo and Jamaica for example. M. Fée states positively that such is the case, but he adds that Cascarilla is brought from Paraguay as well as the West Indies; and Croton Cascarilla has not been recorded as a Paraguay species. Schiede assigns the bark to C. Pseudo-china: an opinion adopted by Mr. Don, who declares that Cascarilla is not imported either from Jamaica or the Bahamas; *Edinb. new phil. journ.* xvi. 368; which is going back to the old assertion that the bark is imported from the Spanish main. But Mr. Pereira has clearly proved, upon the best of all evidence in this case, viz., the customs entries, that Cascarilla principally comes from the Bahamas, as has always been asserted by the most original authorities; and then, taking the authority of Catesby, the author of a "Natural History of Carolina, Florida, and the Bahama Islands," who assures us that a plant which he figures and describes (2. 46. t. 46.) under the name of Ricinoides elæagni folio, produces the Chacrilla or Ilateria of the Bahamas, Mr. Pereira comes to the conclusion that this plant, called C. Cascarilla by Linnæus, is the true source of the officinal bark of that name. To this however there are several objections; in the first place Catesby speaks of a bark exported from the Bahamas a century ago, and I do not know that any evidence exists to prove that Ilateria and Cascarilla are identical; moreover it appears that at the time when this author visited the Bahamas (1722–4) the plant was already becoming scarce from the quantity of its bark that had been consumed, and it would not be unreasonable to conclude that the supply has in fact ceased. It is also to be noticed that it is impossible to say what the plant is that Catesby figured; for I know of no Croton, nor indeed any other plant to which it can belong. If, as is universally believed, it was intended for the C. Cascarilla of Linnæus, I can only say in that case that it bears that plant the smallest possible

resemblance, and might almost as well have been intended for C. Eleuteria; in fact I do not see how any argument can be sustained by reference to so wretched a figure. Admitting however that it was intended for the plant it is universally quoted for, still I cannot look upon it as evidence of much value, for Catesby was not an observer upon whose testimony implicit reliance could be placed, in Botany at least. This Croton Cascarilla is undoubtedly the *wild Rosemary* bush of Jamaica, and is common in other West India islands, as St. Domingo; yet Dr. Wright, a good authority, distinctly asserts that it has none of the sensible qualities of Cascarilla. Then Sloane, an excellent observer, says nothing about its bark being of any use; and again the elder Jacquin, who described it under the name of C. lineare, and who was a close enquirer into the uses of plants, is equally silent; he says indeed "tota planta aromatica et odorifera," but this would be true of a large part of the genus Croton. The evidence therefore that Cascarilla bark is furnished by C. Cascarilla *Linn.* is reduced to the single testimony of Catesby. Opposed to this we have the comparatively recent and equally direct evidence of Woodville, who has figured a plant from specimens sent from the Bahamas as those of the tree supplying Cascarilla, and this plant he rightly determined to be C. Eleuteria, thus confirming the account of Dr. Wright that the C. Eleuteria of Jamaica also yielded Cascarilla. For these reasons, and for another mentioned under C. Pseudo-China, I am obliged to dissent from the very high authority of Mr. Pereira, and to give my opinion in favour of those who assign the bark to the next species. While however it seems certain that at all events the College of Physicians have erred in taking C. Pseudo-China for the officinal bark of this country, is not M. Guibourt right in suggesting that several different species may produce it? I observe that in the bills of entry quoted by Mr. Pereira, two imports came from Lima; now so far as we know none of the species here named have been found in Peru.

361. C. Eleuteria *Swartz. fl. ind. occ.* ii. 1183. *Woodv. suppl.* t. 211. copied in *S. and C.* t. 150. (*Sloane* ii. t. 174. f. 2.) — Thickets in Jamaica and other West India Islands.

A small tree. Branches and twigs angular, rather compressed, striated, downy, ferruginous. Leaves stalked, alternate, ovate, with a short but obtuse point, quite entire, slightly nerved, green on the upper surface, with a few scattered leprous dots, beneath silvery and densely downy, about 2 inches long; petioles scarce ½ inch long, scurfy. Racemes axillary and terminal, branched or compound; the branches short, divaricating, covered with numerous, closely parted, subsessile, monœcious flowers. Males uppermost and smallest; females lowest, few, and on short stalks. Filaments 10–12. Capsule roundish, minutely warted, scurfy, not much bigger than a pea, with 3 furrows, 3 cells and 6 valves. — I have already stated why I consider it certain that this species is the true origin of Cascarilla Bark, as has been affirmed by Drs. Wright and Woodville.

362. C. Pseudo-china *Schlecht. in Linn.* v. 84. — C. Cascarilla *Don in Edinb. new phil. Journal* xvi. 368. — Near Plan del Rio, and Actopan, in the hot country of Mexico.

Young shoots covered with a close brown scurf. Leaves large (4 in. × 3.) cordate-ovate, obtusely acuminate, 3–5-nerved, nearly or quite

entire, silvery and scaly on the under side, bright green and smooth on the upper, except a few scattered minute scurfs; about twice as long as their scurfy silvery taper petioles. Racemes axillary, quite simple, covered with ferruginous scurf, monœcious. Flowers all 5-sepalous and 5-petalous; males with 10–15 stamens. — A very distinct species from C. Eleuteria, and according to Deppe beyond all doubt the true *Quina blanca* or *Copalchi* of the druggists of Xalapa, and in his opinion probably the plant yielding the Cascarilla of Europe. Another bark is also called Copalchi in Mexico, which according to Virey and Guibourt is furnished by Strychnos Pseudo Quina. Professor Don considers it quite certain that this C. Pseudo-China is what furnishes the Cascarilla for Apothecaries' Hall; and he proposes to shift the name of *C. Cascarilla* to it; a proposition which is inadmissible: firstly, because there is no end to such changes, and secondly because Mr. Pereira has satisfactorily shown that Professor Don is wrong in his statement. I however regard the admitted fact of the bark of this species being extremely like true Cascarilla as an additional reason for referring that bark to C. Eleuteria, because the two species are very similar, and for not referring it to C. Cascarilla, which is a totally different species. Mr. Pereira has traced the importation of this bark and shown that it resembles Ash Cinchona bark in appearance, and very different in many respects from the officinal Cascarilla of this country. *Med. Gaz.* xx. 850.

363. C. Tiglium *Lam. encycl.* ii. 208. *Roxb. fl. ind.* iii. 682. *S. and C.* i. t. 4. — C. Jamalgota *Hamilt. in Linn. trans.* xiv. 258. — Continent of India, Ceylon.

A middle-sized tree. Young branches terete, smooth, shining, a little furrowed towards the ends. Leaves oval-oblong, acute and 3–5-nerved at the base, acuminate at the point, with shallow glandular serratures; thin, membranous, with 2 glands at their base, covered when young with extremely minute stellate scattered hairs; petioles channelled, about $\frac{1}{8}$ the length of the leaf, when quite young furnished with stellate hairs, but soon losing them. Racemes terminal, erect, male at apex, female below. Flowers downy; ♂. Calyx 5-cleft; petals 5, lanceolate, woolly; stamens 15, distinct. ♀. Calyx 5-cleft permanent. Styles long, bifid. Capsules oblong, obtusely triangular, the size of a hazel nut, closely covered with minute stellate hairs; the cells completely filled with the solitary seeds. Skin of the seeds pale dull brown, overlaying a harder dark integument. — This is one of the plants from which the violently drastic substance called *Croton oil* or *Oil of Tiglium* is prepared. The seeds are the part used. Dr. Francis Hamilton has indeed shown that the original *Grana Dilla*, or *Grana Tilli*, or *Grana Tiglia* were produced in all probability by a different species, C. Pavana, and he proposes to do away with the name of C. Tiglium, substituting the latter and C. Jamalgota for it. I do not however see the necessity for the alteration. Dr. Hamilton admits that many, and it is probable that most, of the Botanists who have spoken of C. Tiglium meant his C. Jamalgota, and therefore with that species the name can without inconvenience remain. It is clearly the plant of Roxburgh, and I know, from Ceylon specimens, that it is the C. Tiglium of that island.

364. C. Pavana *Hamilt. in Linn. trans.* xiv. 259. — Granum Moluccum *Rumph.* iv. t. 42.? — Ava, North-eastern parts of Bengal; Amboyna?

Very like C. Tiglium, but leaves ovate, obtuse at the base, quite destitute of stellate hairs, hardly ever 3-nerved, the principal basal veins being alternate with each other. Flowers larger; males decandrous. Capsule dotted, hispid, with the seeds much smaller than the cells that contain them. — This is supposed to have been the original Tilly-seed plant; but it is doubtful whether the figure quoted from Rumphius belongs to it. There is no question about its being a distinct species; and in all probability others equally allied to it will yield an oil of similar quality.

365. C. Draco *Schlecht in Linn.* vi. 360. — Woods near Papantla in Mexico.

A tree with the leaves, flowers, and young shoots covered all over with a coarse hoary starry fur. Leaves cordate, acuminate, minutely toothed or entire, longer than their footstalks, as they grow older losing their hoariness a little; the larger about 5 × 3 inches; petioles with 4 wart-like glands at the apex, so hidden by the fur that they cannot be seen till it is scraped away. Racemes 1–2 feet long, with the hoary flowers clustered at regular intervals all along it. Male flowers with 20–24 stamens. — According to Schiede this abounds in a sanguine juice, which hardens into the finest kind of *Dragon's blood* (*Sangre del drago* of the Mexicans), used in Mexico as a vulnerary and astringent.

366. C. sanguifluus *HBK.* ii. 89. of New Andalusia; and

367. C. hibiscifolius *HBK. ib.* of New Granada; have similar properties, and are equally called *Sangre del Drago.*

368. C. polyandrum *Roxb. fl. ind.* iii. 682. — Jatropha montana *Willd. sp. pl.* iv. 563. — Borders of rills and moist places in the Circar mountains.

Stems several from the same root, shrubby, straight. Branches few; young shoots a little downy and round, 3–6 feet high. Leaves alternate, stalked, oval, sometimes lobed, deeply toothed, or coarsely and remotely serrate, a little hairy, 3-nerved, with 2 projecting brown glands at the base; from 2 to 6 inches long. Petioles round, about 1 inch long. Stipules 0, but 2 glands in their place. Male flowers racemose, small, dull yellow. Racemes axillary, erect, interrupted. Calyx 5-leaved. Corolla 0. Disk a membranaceous, yellow ring, surrounding the base of the filaments. Filaments shorter than the calyx, numerous, distinct, compressed, clavate, with the points bifid, and bearing each 2 oval anthers. Female flowers stalked, axillary. Calyx cylindrical, 5-toothed. Corolla 0. Disk as in the male. Seeds exactly like those of Ricinus communis, but much smaller. — Seeds reckoned by the Hindoos a good purgative; one seed bruised in water administered for each evacuation. *Roxb.*

N.B. The true genus of this plant doubtful.

369. C. lacciferum *Linn. sp. pl.* 1426. *N. and E. handb.* i. 378. — C. aromaticum *Spreng.* iii. 869. — Aleurites laccifera *Willd.* iv. 591. (*Burm. Zeyl.* t. 91.) — Ceylon.

Branches densely furred. Leaves stalked, oblong, downy, serrulate, acute at each end, or obtuse at the base, with a pair of kidney-shaped glands at the base. Racemes long, terminal, loose, leafless except quite at the base. Flowers single, downy. Fruit tomentose, roundish, the size of a large pea. — Bark of the root aromatic and purgative. The branches yield very fine *lac* in grains, in small quantities.

370. C. suberosum *HBK.* ii. 86. — Salt places near Acapulco.

Branches corky. Leaves ovate-roundish, acute, cordate, entire, thickish, hoary and downy above, shaggy and white beneath, with no glands. Flowers diœcious.—Employed in Peru as an aromatic purgative.

371. C. balsamiferum *Linn. Mant.* 125. *Jacq. amer.* 255. t. 162. f. 3. — Common in Tortola, Martinique and Caraças, on rocky stony cliffs.

A branched diffuse shrub 3–4 feet high, abounding in every part in a thick balsamic brownish balsam. Branches closely covered with rust-coloured fur. Leaves tomentose, ovate-lanceolate, obtuse, mucronate, slightly cordate, with 2 urceolate glands at the base underneath. Spikes terminal, compact, chiefly male, female at the base.—A spirituous liqueur called *Eau de Mantes*, used in irregular menstruation, is distilled from it.

372. C. perdicipes *A. de St. H. pl. us.* 59. used in Brazil as a cure for syphilis, and as a useful diuretic.

373. C. campestris *Id.* 60. has a purgative root, and is employed in syphilitic disorders.

*** Several kinds of Croton, called Orelha d' Onca in Brazil — low hairy shrubs, which grow on elevated grassy plains, — furnish in their roots a good substitute for Senega. They stimulate and promote the secretions especially of the pituitous membranes. They are administered with success in atonic catarrhs, asthma, and even in phthisis tuberculosa. — *Martius.*

RICINUS.

Flowers monœcious. Calyx 3–5-parted, valvate. Petals 0. ♂. Filaments numerous, unequally polyadelphous; cells of the anther distinct, below the apex of the filament. ♀. Style short; stigmas 3, deeply bipartite, oblong, coloured, feathery; ovary globose, 3-celled, with an ovule in each cell. Fruit generally prickly, capsular, tricoccous.—Trees, shrubs, or herbaceous plants sometimes becoming arborescent. Leaves alternate, stipulate, palmate, peltate, with glands at the apex of the petiole. Flowers in terminal panicles, the lower male, the upper female; all articulated with their peduncles, and sometimes augmented by biglandular bracts. *A. de J.* chiefly.

374. R. communis *Linn. sp. pl.* 1430. *Roxb. fl. ind.* iii. 689. *Woodv.* 171. t. 61. *S. and C.* i. t. 50. — (*Rheede* ii. t. 32.) — Cultivated all over India.

A glaucous plant, extremely variable in size: when cultivated in Great Britain an annual 3 or 4 feet high; in India sometimes becoming a pretty large tree "of many years' duration, atleast such is Roxburgh's statement. Clusius saw it in Spain with a trunk as large as a man's body, and 15–20 feet high, and Ray found it in Sicily as big as our common alder trees, woody and long lived; but Willdenow considers the arborescent kinds which are more than annual as distinct species, which he calls R. viridis, africanus, lividus and inermis; they do not appear however to be anything more than mere varieties. Root perennial or annual, long, thick, and fibrous. Stems round, thick, jointed, channelled,

glaucous; of a purplish-red colour upwards. Leaves large, deeply divided into 7 segments, on long, tapering, purplish stalks. Flowers in long, green, and glaucous spikes, springing from the divisions of the branches; the males from the lower part of the spike, the females the upper. Capsules prickly. Seeds ovate, shining, black dotted with grey. — The seeds of this plant yield by expression the well-known valuable cathartic substance called Castor oil.

JATROPHA.

Flowers monœcious. Calyx 5-parted or lobed. Corolla 5-parted or 0. ♂. Stamens 8–10, with unequal monadelphous filaments. ♀. Styles 2, bifid or dichotomous. Capsule 3-coccous.

375. J. Curcas *Linn. sp. pl.* 1429. *Willd. sp. pl.* iv. 560. *As. researches* xi. 169. *Roxb. fl. ind.* iii. 686. *Pereira in Med. Gaz.* xx. p. 821. fig. 202. — A very common small tree or bush on the coast of Coromandel. (Physic nut.)

Bark smooth, light ash-coloured. Leaves scattered, stalked, broad-cordate, 5-angled, smooth, about 6 inches each way. Petioles round, smooth, 4–6 inches long; Stipules 0. Panicles terminal, or from the exterior axils, cymose, bearing many small, yellow flowers. The male flowers at the extremities of the ramifications, on short, articulated pedicels, and the female ones in their divisions, with their pedicels not articulated. Bractes a small one below each subdivision of the panicle, and generally one pressing on the calyx. ♂. Calyx 5-leaved. Corolla 5-petaled, campanulate, somewhat hairy. Disk of 5 glandular bodies, round the base of the filaments. Filaments 6, the central one very thick, columnar; the 5 exterior ones filiform, towards the base adhering to the central one, all erect, and a little longer than the calyx. Anthers 10, sagittate, equal; 5 supported by the large central filament, and 1 by each of the others. ♀. Calyx, corolla, and disk as in the male. Ovary oblong, smooth; Styles 3, short; stigma bifid, somewhat hairy.—The leaves rubefacient and discutient; warmed and rubbed with castor oil are applied by the natives of India to inflammations when suppuration is wished for. Seeds are violently emetic and drastic; their expressed oil reckoned a good external application in itch and herpes; it is also used a little diluted, in chronic rheumatism. Milky juice reckoned detergent and healing; it dyes linen black. The oil boiled with oxyde of iron forms a varnish used by the Chinese for covering boxes. In large doses the seeds are energetic poisons. According to Martius this produces in Brazil the *Pinhões de Purga*, one of the strongest known drastics; in a fresh state 1 seed is sufficient for a dose.

376. J. glauca *Vahl. symb.* i. 79. *Willd. sp. pl.* iv. 558. — Croton lobatum *Forsk.* 162. (*Pluk.* t. 220. f. 4.) — Arabia felix.

Leaves 3–5-lobed, mucronate, serrate, toothed. Petioles naked. Stipules palmate, with setaceous branched divisions glandular at the apex. — Seeds yield stimulating oil recommended by the Hindoos as an external application in cases of chronic rheumatism and paralytic affections. *Ainslie.*

377. J. glandulifera *Roxb. fl. ind.* iii. 688. — East Indies.

Leaves about the extremities of the branchlets, alternate, petioled,

generally palmate; lobes from 3 to 5, oblong, serrate, with each serrature ending in a short, green, glandular-headed bristle. Stipules bristly, many-cleft, each division ending in a glandular head. Panicles terminal, about as long as the leaves. Male flowers most numerous and terminal, small, of a pale greenish yellow colour. Female flowers few, and subsessile in the divisions of the panicle. — The pale or whey-coloured thin juice which exudes from a fresh wound is employed by the Hindoos as an escharotic to remove films from the eyes. *Roxb.*

377 *a.* J. multifida *Linn. sp. pl.* 1429. (*Dill. elth.* 217. t. 173. f. 213.) — Tropical America.

Leaves palmate, 11-lobed, smooth; the segments wedge-shaped and pinnatifid. Stipules setaceous, multifid. Flowers corymbose, scarlet, with coloured pedicels. — The seeds are one of the best of all emetics and purgatives, acting briskly, but without inconvenience; their effects are readily stayed by the administration of a glass of good white wine.

377 *b.* Omphalea triandra *Linn. sp. pl.* 1377. *Aubl.* t. 328, a native of tropical America, although not used for medical purposes, deserves to be noticed here as producing, in a poisonous family, the most delicious and wholesome of all known nuts.

JANIPHA.

Flowers monœcious. Calyx campanulate, 5-parted. Petals 0. ♂. Stamens 10; filaments unequal, distinct, arranged around a disk. ♀. Style 1. Stigmas 3, consolidated into a rugose mass. Capsule 3-coccous. *A. de J.*

378. J. Manihot *HBK.* ii. 85. *Bot. Mag.* t. 3071. — Jatropha Manihot *Linn. sp. pl.* 1428. Manihot utilissima *Pohl. pl. bras. ic.* i. 32. t. 24. — Brazil.

Root oblong, tuberous, as big as one's fist, full of a wheyish, venomous juice. Stems white, crooked, brittle, having a very large pith, and several knobs sticking out on every side like warts, being the remains of the footstalks of the leaves, which have dropped off, usually 6 to 7 feet high, with a smooth, white bark; branches crooked, and have, on every side, near their tops, leaves irregularly placed on long terete petioles, broadly cordate in their outline, divided nearly to their base into 5 spreading, lanceolate, entire segments, attenuated at both extremities, dark green above, pale glaucous beneath; the midrib strong, prominent below, and there yellowish red: from it there branch off several oblique veins, connected by lesser transverse ones. Stipules small, lanceolate, acuminate, caducous. Panicles or compound racemes, axillary and terminal, 4 to 5 inches long, bearing sometimes all male or all female flowers, at other times these are mixed on the same peduncle. Pedicels with small, subulate, bracts at their base. Male flowers smaller than the female. Calyx purplish on the outside, fulvous-brown within, cut about half way down into 5 spreading segments. Disk orange-coloured, fleshy, annular, 10-rayed. Stamens 10, alternate with the lobes of the disk. Filaments shorter than the calyx, white, filiform, free. Anthers linear-oblong, yellow. Female flower of the same colour as the male, deeply 5-parted, the segments lanceolate-ovate, spreading. Disk an annular, orange-coloured ring, in

which the purple, ovate, furrowed ovary is embedded; style short; stigmas 3, reflexed, furrowed, and plaited, white. Capsule ovate, 3-cornered, tricoccous. Seeds elliptical, black, shining, with a thick, fleshy funiculus. — Expressed juice dangerously poisonous. Fecula of the root harmless when separated from the juice and exposed to heat, becoming *Cassava*, a principal article of diet in South America. The nutritious substance called *Tapioca* is the cassava differently prepared and granulated. These preparations are obtained by crushing the roots, after the bark has been removed and straining off the water, when the mass is gradually dried in pans over the fire.

ANDA.

Flowers monœcious. Calyx campanulate, 5-toothed. Petals 5. ♂. Stamens 8; filaments unequal, monadelphous at base. ♀. Style bifid; stigmas 2. Fruit fleshy, containing a loopholed 2-celled stone.

379. Anda Gomesii *A. de J. mon. euph.* 39. — Brazil.

A large lactescent tree. Leaves quinate, with entire, ribbed, shining, stalked leaflets; with the petioles furnished with 2 sessile glands at the division. Flowers panicled, terminal; the males on stalks having each 2 bracts and 2 glands; the females somewhat sessile. — Bark used for intoxicating fish. Seeds a safe and useful purgative in doses of 2 seeds; they have the taste of hazel nuts. The Brazilians use them instead of castor oil. The bark roasted passes as a certain remedy for diarrhœa brought on by cold. According to Martius it is called *Anda-açu, Indayaçu, Purga de Gentio, Cocca, or Purga dos Paulistas, Frutta d'Arara* in Brazil. — Two or three seeds prepared as an emulsion, act as a very powerful and safe purgative; they seldom excite vomiting. It has been found extremely efficacious in weakness of the lymphatic system, and particularly in general dropsy.

HEVEA.

Flowers monœcious. Calyx 5-cleft or parted. Petals 0. ♂. Stamens columnar, 5–10, with the anthers below the apex. ♀. Stigmas 3, 2-lobed. Fruit somewhat fleshy, tricoccous. *A. de J.*

380. H. guianensis *Aubl.* ii. 871. t. 3315. — Siphonia Cahuchu *Willd.* iv. 567. Siphonia elastica *Pers. syn.* ii. 588. Jatropha elastica *Linn. suppl.* 422. Poa Seringa *Act. Par.* 1751. t. 20. — Woods of Guayana.

A tree with a trunk 50–60 feet high, and 2–2½ in diameter. Leaves alternate, approximated, 3-foliolate, articulated at the top of a long slender stalk, convex below, furrowed above, and swelled at its base; leaflets smooth, oval, acute, green above, cinereous beneath. Fruit oblong, greenish, 3-cornered, broadest at the base, tricoccous, each coccus opening with 2 valves. Seed ovate, brownish variegated with black, with a thin brittle testa, and a sweet nut-like pleasant kernel. — Seeds are said to produce no inconvenience when eaten. This plant produces the common Demerara and Surinam *Caoutchouc*, which is imported in bottles and other forms. The cheese Caoutchouc is probably furnished by some other tree or trees.

ALCHORNEA.

Flowers dicœcious. ♂. Calyx 2–5-parted. Stamens 8; with the filaments united in a ring at the base. ♀. Calyx 3–5-toothed. Style bipartite. Stigmas 2. Capsule baccate, dicoccous. *A. de J.*

381. A. latifolia *Swartz prodr.* 98. *fl. ind. occ.* ii. 1154. — Mountains in the South of Jamaica.

A tree 20 feet high. Leaves stalked, ovate, acuminate, obtuse, remotely toothletted, very smooth and shining, rugose beneath; petioles long, reflexed, smooth. Racemes axillary and terminal, 6–10 inches long, compound, somewhat panicled. Males in alternate clusters of 4–5, yellow-green. Sepals ovate, concave, equal, coloured. Female racemes longer, drooping, generally lateral, not axillary, simple, angular, smooth; flowers subsessile, alternate, remote, solitary. Capsule blackish, the size of a large pea. — Nees and Ebermaier refer the *Alcornoco bark* to this plant; but it appears upon Humboldt's authority to be the produce of Bowdichia, which see in Fabaceæ.

CATURUS.

Flowers dicœcious. ♂. Calyx 3-fid. Stamens 3. ♀. Calyx 3-parted. Styles 3, lacerated. Capsule 3-coccous. *A. de J.*

382. C. spiciflorus *Linn. Mant.* 127. *Roxb. fl. ind.* iii. 760.— Acalypha hispida *Burm. ind.* t. 61. f. 1. (*Rumph.* iv. t. 37. ff. 1. 2.) — East Indies.

A shrub. Leaves on long stalks, cordate, serrate. Flowers axillary, spiked, pendulous, longer than the leaves. — Flowers said to be a specific in diarrhœa and similar disorders: boiled in water or administered in the form of a conserve.

ACALYPHA.

Flowers monœcious or dicœcious. ♂ Calyx 4-parted, stamens 8–16; cells of the anther distinct, vermiculate. ♀. Calyx 3-parted. Styles 3, lacerated. Capsule 3-coccous. *A. de J.*

383. A. indica *Linn. sp. pl.* 1424. *Willd. sp. pl.* iv. 525. *Roxb. fl. ind.* iii. 675. — Cupameni *Rheede* 10. t. 81. and 83. — A common annual in gardens in India.

Stem 1–2 feet high, round, smooth, branched. Leaves stalked, ovate-cordate, 3-nerved, serrate, smooth, 2 × 1½ inches; petioles as long as leaves; stipules small, subulate. Spikes axillary, usually solitary, stalked, erect, as long as the leaves, many-flowered, crowned with a body in the form of a cross. Male flowers numerous, crowded round the upper part of the spike. Sepals 4, cordate. Filaments numerous and very minute. Females remote, enclosed in a cup-shaped involucre, which has an opening on the inner side and is striated, smooth, toothed, 2–4-flowered. Sepals 3. — Root bruised in hot water cathartic. Decoction of leaves laxative.

MERCURIALIS.

Diœcious, or occasionally monœccious. Calyx 3-parted. ♂. Stamens 9–12. ♀. Ovarium double, with 2 opposite furrows and 2 sterile filaments proceeding from either furrow. Styles 2, forked. Fruit dry, consisting of 2 cells bursting with elasticity, and containing each 1 seed.

384. M. perennis *Linn. sp. pl.* 1465. *E. Bot.* t. 1872. *S. and C.* ii. t. 78. — Cynocrambe *Ger. em.* 333. f. — Common in bushy places all over Europe.

Root creeping. Herbage rough, fetid. Stems unbranched, square, a foot high, leafy in the upper part. Leaves ovate, acute, serrated, 2 or 3 inches long, with small stipules. Flowers on axillary stalks, in uninterrupted, erect spikes; the barren ones most numerous. Sterile filaments very narrow, rising above the styles. — Very poisonous, though, as appears from the accounts of ancient writers, it may be eaten boiled, as a pot-herb, if mixed with mucilaginous plants, and oily substances. Instances are, however, recorded of the fatal consequences of its use occasionally in this country. *Smith.* According to Sloane it has sometimes produced violent vomiting, incessant diarrhœa, a burning heat in the head, a deep and long stupor, convulsions, and even death.

385. M. annua *Linn. sp. pl.* 1465. *E. Bot.* t. 559. — Common in waste ground in various parts of Europe.

Root much branched; simple at the crown. Stem from 6 to 12 inches high, erect, bushy, smooth, of a bright shining green, disposed to turn blueish after drying, like M. perennis. Branches numerous, crossing each other. Leaves ovate-lanceolate, serrated. Flowers green, the males in small tufts, ranged in interrupted spikes; females fewer, stalked, axillary, destitute of sterile filaments. — The qualities of this are like those of M. perennis, though supposed to be rather less virulent. *Smith.*

TRAGIA.

Flowers monœcious. ♂. Calyx 3-parted. Stamens 2–3. ♀. Calyx 5–8-parted. Style 3-fid. Capsule 3-coccous. *A. de J.*

386. T. involucrata *Linn. sp. pl.* 1391. *Jacq. ic. rar.* i. t. 190. *Roxb. fl. ind.* iii. 576. — (*Burm. Zeyl.* t. 92. *Rheede* ii. t. 39.) — Shady places and hedges all over India.

A perennial twiner. Branches covered closely with hair. Leaves stalked, oblong, acuminate, serrate, 3-nerved, very hairy and rough; stipules cordate. Racemes stalked, erect, many-flowered, with 1 female to each. Hairs of all the parts stinging. — Roots according to the Hindoo doctors useful in altering and correcting the habit in cachexia and old venereal complaints attended with anomalous symptoms. *Ainslie.*

SAPIUM.

Flowers monœcious. ♂. Calyx 2-fid. Stamens 2. ♀. Calyx 3-toothed. Style 3-fid. Capsule 3-coccous. *A. de J.*

387. S. aucuparium *Willd. sp. pl.* iv. 572. *Jacq. amer.* 249. t. 158. — Hippomane biglandulosa *Linn. sp. pl.* 1431. (*Pluk.* t. 229. f. 8.) — Woods of Carthagena.

A tree 30 feet high. Leaves oblong-lanceolate, acute, serrate, with an intermixture of larger and rounder teeth, coriaceous, shining, about 6 inches long. Spikes terminal, lax, thick, green, about 6 inches long, male above, female below. Males about 14, clustered, sessile, with 2 oblong, obtuse, large, flattish, greenish-yellow glands at their base. Females solitary, with 2 similar glands at their base. Calyx of both sexes dark purple. — The inspissated juice furnishes a kind of bird-lime, which is venomous. The vapours from this juice highly dangerous, producing erysipelatous inflammation.

388. S. indicum *Willd.* iv. 572. *Roxb. fl. ind.* iii. 692. — (*Rheede* iv. t. 61.) — Delta of the Ganges.

Leaves alternate, stalked, somewhat pendulous, broad-lanceolate, serrate, smooth, of a deep shining green, 2–4 inches long, and broad in proportion; stipules small, deciduous. Male flowers on terminal, cylindrical catkins. Scales glandular, 3–4-flowered. Calyx 3-parted; divisions somewhat cordate, expanding. Corolla 0. Filaments longer than the calyx; anthers ovate. Female flowers at the base of the catkins often solitary. Calyx from 3 to 4-parted. Corolla 0. Styles 3-cleft, divisions entire, and recurved; stigma enlarged. Capsule, or nut globular, of the size of a nutmeg, 3-celled, 6-valved, thick and exceedingly hard. Seed solitary, affixed by the apex, oval, smooth. — Juice highly poisonous. Seeds used for intoxicating fish.

HIPPOMANE.

Flowers monœcious. ♂. Calyx turbinate, 2-fid. Stamens 2. ♀. Calyx 3-parted. Style 1. Stigmas 7. Fruit fleshy, containing a 7-celled nut. *A. de J.*

389. H. Mancinella *Linn. sp. pl.* 1431. *Jacq. amer.* 250. t. 159. — (*Sloane* ii. t. 159. *Comm. hort.* i. t. 68.) — Sea coast of the West India islands, and neighbouring continent.

A very large tree. Leaves ovate, serrate, acute, shining; their stalk with a roundish, depressed, brownish gland. Spikes terminal, lax, green, erect. Male flowers about 30, collected in a concave scale-like deciduous bract, having 2 lateral, orbicular, depressed, large glands at the base. Females solitary, sessile, with similar glands at the base. Fruit very like a little apple, with a white milky flesh. — The whole tree abounds in a white, caustic, venomous juice. A drop of it on the back of the hand, produces instantaneously like a fire, a blister. All the other parts are acrid in a similar manner. It is uncertain whether sleeping in its shade is so dangerous as popular rumour represents. Jacquin doubts if the stories of land-crabs fed on the fruit becoming poisonous can be true.

HURA.

Flowers monœcious, amentaceous. ♂. Calyx truncate. Stamens numerous, united into a solid colnmn. ♀. Style 1. Stigma with 12–18 rays. Capsule with 12–18 cocci.

390. H. crepitans *Linn. sp. pl.* 1431. *Willd.* xiv. 592.—(*Hort. cliff.* t. 34. *Trew.* tt. 34—35.)—West India Islands, Mexico and Guayana. (Sandbox.)

A tree abounding in milky juice. Leaves cordate, acuminate, entire, or very slightly toothed, stalked, smooth, coriaceous, with simple veins passing from the midrib to the margin, in a curved direction within a ¼ of an inch or so of each other, and connected by numerous oblique veinlets; stipules large, ovate, leafy, deciduous; petioles as long or rather longer than the leaves, with 2 glands at the apex. Male flowers arranged in an erect long-stalked axillary conical catkin, composed of imbricated 1-flowered scales. Calyx short, urceolate, truncate. Column of stamens surrounded in the middle by 2 or 3 rows of tubercles, each of which bears an anther on its under side. Female flower solitary, at the base of the male peduncle or near it. Calyx urceolate, entire, or dividing eventually into 3 parts. Stigma very large, discoidal, peltate. Fruit a depressed umbilicated woody capsule, about the size of a middling apple, with from 12–18 furrows, which separate into as many cocci, which fly asunder, each opening into 2 valves, with great elasticity when dry and fully ripe.—Milk so venomous as to produce blindness a few days after touching the eye. Seeds a violent drastic dangerous purgative. Aublet states that negro slaves to whom 1 or 2 seeds had been administered in the form of an emulsion were nearly killed by them. Martius reckons the plant an emetic.

EXCÆCARIA.

Flowers monœcious or diœcious, amentaceous. ♂. Nothing but staminiferous bracts. Stamens 7–9, united into about 3 parcels, all connected at the base. ♀. Calyx 3-fid, or 0. Style 3-parted. Capsule 3-coccous. *A. de J.* in part.

391. E. Agallocha *Linn. sp. pl.* 1451. *Swartz fl. ind. occ.* ii. 1121. *Roxb. fl. ind.* iii. 756.—Arbor excæcans *Rumph.* ii. tt. 79, 80.—Common in various parts of the continent and islands of India, especially on the coast.

A small, crooked, stunted tree. Leaves alternate, about the extremities of the branchlets, stalked, ovate or cordate, but usually acute at the base, smooth on both sides, remotely and slightly serrate, pointed, with 2 glands at the base, and about 2 inches long. Petioles about an inch long, smooth, channelled. Stipules small, fine pointed. ♂. Aments axillary, often crowded, cylindric, while young imbricated with five spiral rows of 1-flowered, reniform bracts, which lengthen by age, when the flowers become distinct. Calyx 0. Five small scales round the base of the filaments. Anthers with 2 large lobes. ♀. Aments solitary, axillary, the lower half containing

from 2 to 4, or even 6, rather remote, 1-flowered scales, the remaining part imbricated with numerous, small, neuter scales. Sepals 3, cordate, pointed. Ovary 3-lobed. Styles 3, recurved; stigmas simple. Capsule tricoccous. — Trunk abounding in a most dangerous virulent acrid milk. Wood-cutters upon whom this juice has flown after a stroke of their axe reported to Roxburgh that it produced inflammation and ulceration. Rumph. states that the Dutch sailors who were sent ashore in Amboyna to cut timber, sometimes became furiously mad from the pain produced by the juice that fell on their eyes, and that some of them altogether lost their sight. *Agallochum* or *Aloeswood* is not produced by this tree, but by Aquilaria Agallochum.

COMMIA.

Flowers dicœcious. ♂. Amentaceous. Bracts staminiferous. Stamens several, united into a column. ♀. Racemiferous. Calyx 3-parted. Styles 3. Capsule 3-lobed.

392. C. cochinchinensis *Lour. cochinch.* 742. — Cochinchina.

A small tree with resinous juice. Leaves alternate, entire, smooth. Male flowers amentaceous; catkins consisting of imbricated 1-flowered scales, axillary, short. Female racemes somewhat terminal, small, numerous. — This tree yields a white tenacious gum of an emetic, purgative, deobstruent nature. If prudently administered it is useful in obstinate dropsy and obstructions. *Lour.*

EUPHORBIA.

Flowers collected in monœcious heads, surrounded by an involucrum, consisting of 1 leaf with 5 divisions, which have externally 5 glands alternating with them. ♂. Naked, monandrous, articulated with their pedicel, surrounding the female, which is in the centre. ♀. Naked, solitary. Ovarium stalked. Stigmas 3, forked. Fruit hanging out of the involucrum, consisting of 3 cells, bursting at the back with elasticity, and each containing 1 suspended seed.

§ 1. Succulent leafless, or nearly leafless, Species.

393. E. Tirucalli *Linn. sp. pl.* 649. *Roxb. fl. ind.* ii. 470. — *Rheede* ii. t. 44. *Rumph.* vii. t. 29.—A native of various parts of India.

Branches erect, naked, round, succulent, polished, abounding in milky juice. Leaves small, linear, fleshy, sessile, at the ends of the twigs. Flowers crowded, subsessile, terminal and axillary. Lobes of the involucre 5, roundish, smooth, peltate; tube woolly on the inside. Capsule villous. — Milk introduced into the eye produces severe inflammation and even blindness. According to Sonnerat the milk mixed with flour is taken in India in doses of a drachm a day as a remedy for syphilis, and successfully in cases that are not inveterate.

The same milk thickened by boiling has been used as a cathartic and emetic: but its action is so violent as to render its use very dangerous.

394. E. tribuloides *Lam. encycl.* ii. 412. *Willd.* ii. 835. — Canaries.

Stem almost 2 inches high and 1 inch broad, ovate, fleshy, quadrangular, having 2 opposite, stalked, ovate, spathulate leaves growing from its base. Prickles in pairs, white, clustered on the margin of the angles. — Said to be a sudorific.

395. E. antiquorum *Linn. sp. pl. Blackw. herb.* t. 339. — (*Rheede.* ii. t. 42. *Comm. hort.* i. t. 12.) — Common on barren uncultivated land all over India, and Arabia-Felix.

Stem shrubby, leafless, succulent. Branches spreading, triangular, or quadrangular; angles sinuated and armed with double spines at the protuberances. Peduncles solitary, or in pairs; 3-flowered. Stamens only 5. — Bark of the root bruised and taken in water is purgative. *Rheede.* It is supposed by some that this plant yields the drug *Euphorbium*, a resinous substance, possessing acrid irritant poisonous properties. In all probability, however, it is obtained from E. officinarum. Dr. Christison assigns the substance to the latter; Guibourf to this species, officinarum and canariensis. According to Hamilton and Royle, no euphorbium is obtained from this, at least in India.

396. E. canariensis *Linn. sp. pl.* 646. *Willd.* ii. 882. *Blackwell* t. 340. f. 1. — (*Comm. hort.* ii. 207. t. 104.) — In the Canary Islands.

Stems shrubby, succulent, erect, branched, leafless, very open and simple. Branches with from 3–4 angles, armed with double, hooked, dark, shining spines. Flowers somewhat sessile, below a pair of spines, supported on each side by an ovate, concave, green bract. Lobes of the involucre sessile, fleshy, entire, very obtuse, dull purple. — Properties the same as those of E. officinarum, but weaker. *Forsk.* Martius regards this as the source of *Euphorbium*, but Mr. Pereira says that he is certainly in error, as all our Euphorbium comes from Mogador.

397. E. heptagona *Linn. sp. pl.* 647. *Willd.* ii. 883. — (*Bradl. succ.* ii. t. 13. *Boerh. lugdb.* i. t. 258.) — Cape of Good Hope.

Stem succulent, leafless, naked, with 7 rounded angles, and very long solitary subulate flower-bearing spines. — Virey says the Æthiopians tip their arrows with the milk, which is a mortal poison.

398. E. officinarum *Linn. sp. pl.* 47. *Forsk.* p. 94. *DC. pl. grass.* t. 647. *Willd.* ii. 884. *Blackw.* t. 340. f. 2. *S. and C.* iii. t. 142. — (*Comm. hort.* i. t. 11.) — Arabia, and the hotter parts of Africa.

Stems short, tufted, succulent, leafless, naked, prickly, with many angles; prickles in pairs, short, thick and strong. — Milk purgative; 7 or 8 drops mixed with flower are made into pills, or taken in cow's milk, as a dose, according to Forskahl. Mr. Pereira considers that the *Dergmuse* of Mr. Jackson, from which according to the latter author

Mogadore Euphorbium is obtained, is a species nearly related to this. Mr. Jackson's account of the plant is this:—"Its stem is at first soft and succulent, but after some years becomes hard; the branches are scalloped, and have on their sides small knots, from which grow 5 extremely sharp-pointed thorns, about ½ of an inch in length. The branchlets bear each on its top a vivid crimson flower. The general form of the plant, with its branches, is that of a goblet." *Med. Gaz.* xx. 745.

§ 2. Species with permanent conspicuous Leaves.

399. E. Ligularia *Roxb. fl. ind.* ii. 465.—Ligularia *Rumph.* iv. t. 40. — Bengal, and the Indian Archipelago.

Trunk when old about 20 feet high and 1 foot in diameter. Branches succulent, 5-sided, angled, with the angles divided into coarse teeth armed with a pair of short hard black spines. Leaves alternate, about the summits of the branches, short-stalked, inserted singly on the teeth of the branches, wedge-shaped, entire, waved, fleshy, smooth on both sides, almost veinless, from 6 to 12 inches long, and 2 or 3 broad, deciduous. Peduncles solitary in the sinuses between the teeth of the branchlets, short, once twice or thrice dichotomous, with a sessile flower in the forks, that is, bearing 3, 7, or 15 flowers. The sessile flower which is the largest, is often entirely male, the lateral, or terminal peduncled ones have always been found to contain 1 pistil, and male florets. Flowers greenish yellow. Bractes reniform, opposite, embracing the base of the pedicels on the outside, withering. Involucre with 5 round-cordate fringed lobes, with a finely ragged margin.— Root mixed with black pepper used in India as a cure for the bite of the rattlesnake.

400. E. nereifolia *Linn. sp. pl.* 648. *Willd.* ii. 884. *Roxb. fl. ind.* ii. 467.—(*Rheede* ii. t. 43.) — Dry barren hills in India.

A tree of small stature; branches round, armed with stipulary spines. Leaves subsessile, wedge-shaped. Peduncles 3-flowered.—Roxburgh considers this and the last to have been confounded by botanists, and gives the above as a discriminating character of the present species. Juice of the leaves prescribed by Indian native practitioners internally as a purge and deobstruent, and externally, mixed with Margosa oil, in such cases of contracted limbs as are induced by ill-treated rheumatic affections. The leaves no doubt diuretic. *Ainslie.*

401. E. Gerardiana *Jacq. fl. austr.* v. t. 4366. *Röper. euphorb.* 65. — E. Cajogala *Ehr. beitr.* ii. 102. E. linariæfolia *Lam. enc.* ii. 102. E. glaucescens *Willd. enum. suppl.* 28.— Middle Germany, and Hungary.

Root perennial. Leaves membranous, rigid, lanceolate, sessile, acute or obtusish, mucronate, entire, smooth. Flowering branches collected under the whorl into a multifid false umbel, or arranged in a 5-cleft whorl. Lobes of the involucre obtusely triangular. Ovaries convex at back, smooth, beset with elevated minute points. Seeds obovate-cylindrical, smooth, opaque, whitish.—Bark of the root ca-

thartic and emetic; it is said by Loiseleur Deslongchamps, to be the best of the European Euphorbias, and to vomit easily in doses of 18–20 grains.

402. E. Lathyris *Linn. sp. pl.* 655. *E. Bot.* t. 2255. *Willd.* ii. 506. *Röper. euph.* 67. — Common in cottage gardens, and occasionally as if wild; its native country is not exactly known.

Biennial, very glaucous. Stem strong, erect, 2–4 feet high, smooth and round. Leaves somewhat coriaceous, linear-oblong, sessile, rather acute, or obtuse, mucronate, entire, smooth, of a dark glaucous green. Whorl 4-cleft, rarely bifid, still more rarely 5-cleft. Bracts heart-shaped, entire, tapering. Lobes of the involucre lunate, 2-horned; the horns dilated and obtuse. Ovaries convex at the back, with a deep longitudinal furrow, even, smooth. Seeds obovate, truncate at the base, rough, brown, not shining.— This plant, the Cataputia minor of old Pharmacopœias, has drastic seeds; country labourers are said to take 1 as a purge, and women several to procure abortion. Bark of the root and stems reduced to powder are cathartic and emetic. It was one of the plants directed by Charlemagne, in his Capitularies, to be grown in every garden; no doubt as the most ready purge then to be procured.

403. E. Esula *Linn. sp. pl.* 660. *E. Bot.* t. 1399. *Röper. euph.* 64. — Various parts of Europe, in woods.

Perennial. Leaves membranous, lanceolate, sessile, bluntish, muricate, entire, or with a few roughish teeth towards the point, smooth. Flowering branches either arranged under the whorl, in a sort of multifid false umbel, or occasionally in a 5-cleft whorl. Lobes of the involucre lunate, somewhat 2-horned. Ovaria convex, smooth, and round, with dots at the back. Seeds obovate, smooth, greyish brown, not shining. — A dangerous poison. A woman is stated by Scopoli to have died half an hour after swallowing 30 grains of the root.

404. E. Cyparissias *Linn. sp. pl.* 661. *E. Bot.* t. 840. — Various parts of Europe in thickets and barren places.

Perennial. Leaves membranous, stiff, linear, sessile, obtuse, or rather pointed, entire, smooth. Flowering branches either arranged under the whorl, in a sort of multifid false umbel, or occasionally in a 5-cleft whorl. Lobes of the involucre lunate, somewhat 2-horned. Ovaria smooth, convex at the back, roughish, with dots. Seeds obovate, smooth, greyish-brown or whitish, not shining. — A virulent poison. A woman is said to have died in half an hour after taking a dose of the root; and in other cases the skin of the face has peeled off in consequence of its use. Nevertheless, the powder of the root in doses of 6–20 grains, or even from a scruple to a drachm, has been given without bad consequences.

405. E. thymifolia *Linn. sp. pl.* 651. *Forsk.* p. 94. *Willd.* ii. 898.— (*Pluk.* t. 113. f. 2. *Burm. Zeyl.* t. 105. f. 3.)— Gravelly places all over India.

A little annual plant. Branches quite prostrate, hairy, coloured red. Leaves small, opposite, oblique, ovate, serrate. Flowers axillary, crowded, on short stalks. Lobes of the involucre white and red, crenulated. — Juice made into a paste with wheat-flour, and formed into pills, is a violent purgative in doses of 5 pills. The fresh plant

bruised, is applied to wounds among the Arabs. *Forsk.* Leaves and seeds given by the Tamool doctors of India in worm cases, and certain bowel affections of children.

406. E. Ipecacuanha *Linn. sp. pl.* 653. *Bot. mag.* t. 1494. *Bigelow. med. bot.* iii. t. 52. — Sandy soils in the middle and northern states of North America.

Root irregular and fleshy, very large in proportion to the plant it bears, running deep into the sand, sometimes extending to the depth of 6 feet. The stems from 1 root, are numerous, erect, or procumbent, forming large branches on the surface of the ground. They are smooth, regularly dichotomous, and jointed at the forks. The leaves are inserted at the joints, opposite, sessile, smooth, having most frequently an oblong shape, though different plants possess every intermediate variety in the form of the leaf, from circular to linear. Their size and colour are likewise variable. Flowers solitary, on long peduncles from the forks of the stem. Calyx spreading, divided into 5 obtuse segments. Inner segments or nectaries 5, small, gibbous. Stamens numerous, in 5 parcels, appearing at different times 2 or 3 together, with double anthers. The fertile flowers have a large, roundish, drooping, pedicelled germ, crowned with 6 revolute stigmas. Capsule 3-celled. — Root acts powerfully as an emetic; in doses of from 10 to 20 grains it is both an emetic and cathartic; it is more active than Ipecacuanha in proportion to the number of grains administered. It wants, however, the peculiar mildness of that drug.

407. E. Peplis *Linn. sp. pl.* 652. *E. Bot.* t. 2002. — Πεπλις *Dioscorides.* — Sea coast of the south of Europe, and even of the south-west of England.

Branches firm. Leaves oblong, deeply cordate on one side at the base, entire or slightly toothed towards the base, between fleshy and membranous, very smooth. Lobes of the involucre externally supported by membranous processes. Fruit ovate, 8-cornered, polished and quite smooth. Seeds obovate, somewhat 4-cornered, smooth, whitish. — Properties the same as in E. falcata.

408. E. Peplus *Linn. sp. pl.* 653. *E. Bot.* t. 959. — A common weed in cultivated ground.

Leaves membranous, roundish, tapering into the petiole, very blunt, entire, smooth. Whorl trifid, very seldom 5-fid. Glands lunate, with very long horns. Ovaria with a double-winged keel at the back, wrinkled and scabrous, smooth. Seeds obovate cylindrical, bluntly 6-cornered; 4 of the sides dotted in rows, 2 with a longitudinal furrow, greyish white, not shining. — Qualities the same as in E. falcata.

409. E. falcata *Linn. sp. pl.* 654. *Jacq. austr.* t. 121. *Röper euph.* 67. — E. acuminata and mucronata *Lam.* E. arvensis *Schleich.* Πεπλος *Dioscorides.* — Fields and cultivated places in the middle and south of Europe.

An annual. Leaves membranous, rigid, lanceolate, sessile, acute or mucronate, with rough toothings at the edge, smooth. Whorl 3–4–5-fid. Lobes of the involucre lunate. Ovaries convex at the back, smooth, naked. Seeds obovate-cylindrical somewhat 4-cornered; their sides wrinkled transversely, opaque, whitish, cinereous or brown,

— The herb dried and salted was preserved by the ancient Greeks as a powerful purge.

410. E. corollata *Linn. sp. pl.* 658. *Bigel. med. bot.* iii. t. 53. — Dry fields in the United States.

Root large, branching. Stems numerous, from 2 to 5 feet in height. erect, round, and in most instances simple. Leaves scattered, sessile, oblong, obovate or linear, a little revolute at the margin, smooth in some plants, very hairy in others. Umbel 5-rayed, supported by as many bracteal leaves. Not unfrequently a small axillary branch or two arise from the sides of the stem below the umbel. Rays of the umbel repeatedly trifid or dichotomous, each fork being attended by 2 leaflets and a flower. Involucre large, rotate, white, with 5 obtuse petal-like segments; alternate segments 5, very small, obtuse. A great portion of the plants are wholly staminiferous. — A good emetic, in the opinion of Dr. Zollickoffer of Baltimore, not inferior to Ipecacuanha; it is also an expectorant and cathartic. The bruised root when recent excites inflammation and vesication.

411. E. linearis *Retz.* called *Erva do Andourinha* in Brazil. The milky juice is employed for syphilitic ulcers. Martius says it is singular that there is a notion throughout Brazil, that this juice dropped into a fresh wound in the apple of the eye, immediately effects a cure. We were often assured, that this experiment had been tried with success upon fowls.

PEDILANTHUS.

Common involucre slipper-shaped. ♂. Several in the circumference. Pedicels bracteolate, each articulated with a naked anther. ♀. One in the centre. Calyx 0. Style 1. Stigmas 3. Capsules 3-coccous. *A. de J.*

412. P. tithymaloides *Poit. ann. mus.* xix. 388. t. 19. *Kunth synops.* i. 391. *Bot. Reg.* t. 837.—Euphorbia tithymaloides *Linn. sp. pl.* 649. *Jacq. amer.* 149. t. 92. E. myrtifolia *Lam. enc.* ii. 416. (*Comm. hort.* i. t. 16.) — Various parts of the West Indies in stony bushy places, near the coast. (Jew bush.)

A shrub throwing out runners, erect, abont 6 feet high, abounding in white bitter milk. Stems numerous, weak, soft, as thick as the finger, when old cinereous, when young green. Leaves ovate, obtuse or acute, coriaceous, entire, alternate, stalked, distichous, when young downy on each side, and wavy at the edges; becoming at last quite smooth and flat. Peduncles 1-flowered, short, clustered about the extremities of the branches. Involucre slipper-shaped, bright red, with a green back. — The practitioners of Curaçao give a decoction of the whole plant, especially of the stem, as the ordinary beverage, and in arbitrary doses, to patients with venereal complaints. The American women also employ it in suppression of the menses. The plant is moreover known and used as Ipecacuanha.

CELASTRACEÆ.

Nat. syst. ed. 2. *p.* 119.

ELÆODENDRON.

Calyx 5-parted. Petals 5, expanding, linear-oblong. Disk 5-angled, very thick, fleshy. Anthers 5, inserted into the margin of the disk: filaments at length recurved: anthers with a thick connective, roundish, opening longitudinally. Ovary immersed in the disk, 2-celled: ovules 2 in each cell; style short, conical. Stigma simple, obtuse. Fruit drupaceous, dry or pulpy: nut 1–2-celled. Seeds usually solitary, rarely in pairs, with a membranaceous or spongy integument, erect.—Small trees. Leaves opposite, entire, glabrous. Peduncles axillary, branching dichotomously.

413. E. Roxburghii *W. and A.* i. 157. — Neereeja dichotoma *Roxb. fl. ind.* i. 646. — Mountainous parts of India.

Branches numerous, spreading in every direction; twigs opposite, round, and smooth. Leaves opposite and alternate, petiolate, oval, and oblong, serrato-crenate, hard, smooth; about 4 inches long, and 2 broad. Petioles round, $\frac{3}{4}$ inch long. Cymes axillary, globular, thin, throughout dichotomous, with the divisions standing at right angles. Peduncles 3 times the length of the petioles, round, smooth. Flowers small, yellow, not very numerous. Sepals orbicular, unequal, deciduous. Petals oblong, spreading. Disk a large, fleshy, pentagonal ring surrounding the base of the ovary, with the filaments inserted into its angles. Filaments 5, shorter than the petals, spreading. Anthers 2-lobed. Ovary conical. Style shorter than the stamens, thick. Stigma simple. Drupe oblong, succulent, red, smooth, 1-celled. Stone somewhat crustaceous and soft. — The fresh bark of the root rubbed with plain water is by the natives of India applied externally to almost every sort of swelling. It is a very strong astringent, possessing scarcely any other sensible quality. *Roxb.*

CELASTRUS.

Calyx 5-parted. Petals 5, sessile. Disk fleshy, orbicular. Stamens 5, inserted into or under the margin of the disk: anthers opening longitudinally. Ovary sessile, on or half immersed in the disk, 2–3-celled; ovules usually in pairs, rarely 5–6 in each cell. Styles thick, entire, or 2–3-cleft. Capsule 2–3-celled, the dissepiments sometimes incomplete or evanescent. Seeds 1–2 in each cell. — Shrubs with alternate leaves. Peduncles many-flowered, axillary or arranged in terminal panicles.

414. C. paniculatus *Willd. sp.* i. 1125. *Roxb. fl. ind.* i. 621. *DC. prodr.* ii. 6. *W. and A.* i. 158. — C. nutans *Roxb. fl. ind.* i. 623. *DC. prodr.* ii. 6. C. Rothianus *DC. prodr.* ii. 8. — Circar mountains, Mysore, &c.

Unarmed, climbing. Young shoots and flower-bearing branches pendulous. Leaves broadly oval or ovate or obovate, usually with a sudden short acumination, slightly serrated, glabrous. Racemes terminal, compound or supra-decompound, elongated, much longer than the uppermost leaves. Calyx-lobes rounded, ciliated. Margin of the disk thin, free. Capsule globose, 3-celled, 3–6-seeded. Seed with a complete arillus. *W. and A.*— A stimulant and useful medicine according to Dr. Royle. (*Illustr.* 167.)

MAYTENUS.

Flowers polygamous. Calyx 5-cleft, small, permanent. Petals 5, spreading. Stamens 5. A fleshy disk round the ovary. Capsule 1–4-valved, loculicidal. Seeds a few in the bottom of the cells, furnished with an aril. Embryo plane, in fleshy albumen. *DC.*

415. M. chilensis *DC. prodr.* ii. 9. *Bot. Reg.* xx. t. 1702. — Senacia Maytenus *Lam. ill.* n. 2712. Celastrus Maytenus *Willd.* i. 1127. — Mayten *Feuill. obs.* iii. 39. t. 27. — Chili.

A small tree. Leaves alternate, simple, coriaceous, evergreen, ovate-lanceolate, tapering a little at the base and very much at the apex, serrated. Flowers axillary, fascicled, herbaceous, minute. Petals oblong, obtuse, concave, much larger than the teeth of the calyx. Stamens shorter than the petals. Capsules the size of a pea, turbinate, cinereous, coriaceous, 2-valved, 2-seeded. Seeds 2, erect, with an orange-coloured aril. — A decoction of the young branches used in Chili as a wash for swellings produced by the poisonous shade of the tree Lithi. *DC.*

MALPIGHIACEÆ.

Nat. syst. ed. 2. p. 121.

BYRSONIMA.

Calyx 5-parted, with 10 coarse glands on the outside at the base. Petals unguiculate. Filaments shortly monadelphous. Styles 3, distinct. Drupe with a 3-celled, 3-seeded stone.

416. B. crassifolia *DC. prodr.* i. 579. — Malpighia crassifolia and Moureila *Aubl.* tt. 182, 183. — Mountains and savannahs of Guayana.

A small tree. Leaves ovate, thick, entire, glabrous, but covered with stinging hairs above, rufous and downy beneath. Stipules oblong, acute, villous. Flowers in a long terminal spike, yellow. Fruit green and villous. — According to Aublet the bark is employed as a febrifuge in Guayana. Under the name of *Chapara Manteca* it is used in infusion as an antidote to the bite of the rattle-snake. It is also said to be employed successfully as a remedy for abscesses in the lungs. *Ed. new. ph. journ. June*, 1830. p. 169.

ERYTHROXYLEÆ.

Nat. syst. ed. 2. p. 122.

ERYTHROXYLON.

Calyx 5-parted, 5-angled at the base. Styles 3, distinct from the very base, not consolidated.

417. E. Coca *Lam. dict.* ii. 593. *Cav. diss.* 402. t. 229. *Comp. to Bot. Mag.* i. 161 and ii. 25. t. 21. — Cultivated on the Andes of Peru from 2000 to 9000 feet above the sea.

Leaves alternate, 1½–2 inches long, membranous, flat, opaque, acute at both ends, the apex almost mucronate; quite entire, dark green above, pale beneath, 3-nerved in the middle, with fine connecting veins. Petiole 2–4 lines long, with a pair of intra-petiolary ovate-lanceolate brown acute stipules, upon the back of which, indeed, the petiole is articulated, and from which the leaf readily falls away, leaving the branches scaly with the persistent stipules. Flowers numerous, in fascicles from the branches where the leaves have fallen away, bracteated. Peduncles about as long as the flower, sharply angled. Calyx 5-cleft; segments acute. Petals alternate with the

calycine segments, oblong, concave, wavy, with a lacerated and much plaited membrane arising from within and above the base. Stamens 10; filaments longer than the pistil, combined below into a rather short cylindrical tube. Ovary oval. Styles 3, about as long as the ovary. Stigmas thickened. Fruit a 1-seeded, oblong drupe, in a dry state obscurely furrowed. Nut of the same shape and furrowed.—A powerful stimulant of the nervous system, affecting it in a manner analogous to opium. Less violent in its effects than that drug, but more permanent in its action. The Peruvians chew the leaves with finely powdered chalk, and the government of Potosi alone derived a revenue of as much as 500,000 peso duros in the year 1583 from their consumption.

SILENACEÆ.

Nat. syst. ed. 2. *p.* 124.

SILENE.

Calyx tubular, not angular, 5-toothed, naked. Petals 5, with long claws, which are often crowned with scales at the top; limb bifid. Stamens 10. Styles 3. Capsule 3-celled at the base, opening at the top by 6 teeth.

418. S. virginica *Linn. sp.* 600. *Willd.* ii. 703. *DC. prodr.* i. 379. *Elliott* i. 516. *Torrey fl.* i. 450. — S. cheiranthoides *Poir. dict.* vii. 176. S. coccinea *Mönch. suppl.* 306. S. Catesbæi *Walt. car.* 142. *Willd.* ii. 706. *DC. prodr.* i. 379. (*Pluk.* t. 203. f. i. — Various parts of the southern and western parts of the United States.

Root perennial, creeping. Stem mostly erect, simple, about a foot high, viscid and downy. Radical leaves oblong-spathulate; petioles villous; stem leaves lanceolate, scabrous on the margin. Panicle dichotomous, few-flowered. Calyx clavate, with the teeth a little spreading. Petals crimson, deeply 2-cleft, much longer than the calyx; lobes entire or divided. Stamens unequal, exserted. — Root said to be anthelmintic.

419. Saponaria Vaccaria *Linn. sp. pl.* 585. is said to increase the lacteal secretions of cows fed upon it.

420. Saponaria officinalis *Linn. sp. pl.* 584,

421. Gypsophila Struthium *Linn. sp. pl.* 582. are saponaceous, and have been used in washing.

TAMARICACEÆ.

Nat. syst. ed. 2. *p.* 126.

TAMARIX.

Sepals 5, distinct. Petals 4–5. Stamens 4–10, equal, inserted each on and connecting 2 of the teeth of the disk, distinct without any intermediate gland or membrane. Disk fleshy, scutelliform, supporting the ovary, with twice as many teeth on the margin as there are stamens. Styles 2–4, usually 3. Seeds not beaked, with a simple pappus-like coma at their extremity. — Flower-bearing branchlets, usually arranged in panicles. *W. and A.*

422. T. gallica *Linn. sp. pl.* 386. *Ehrenb. in Linn.* ii. 266. *DC. prodr.* iii. 96. — T. indica *Willd. act. berol.* 1812–1813. No. 5. *DC. prodr.* iii. 96. T. epacroides *Smith in Rees's Cyclop.* — Banks and beds of torrents, or sandy islands in large rivers along the basin of the Mediterranean, through Egypt and Palestine to Bengal.

A shrub or large tree, from 6–12 feet high. Branches numerous, slender, erect, gracefully drooping, bright brown, quite smooth. Leaves minute, sessile, smooth, pressed close to the branches. Flowers small, pink or nearly white, in terminal drooping racemose panicles. Stamens 5. Disk 10-toothed. Styles 3, rather long. Capsules tapering. — From this species is collected in the vicinity of Sinai, an abundance of a white sweet gummy substance, resembling Manna, which however is said to contain no Mannite, but chiefly to consist of pure mucilaginous sugar. Ehrenberg considers it as an exudation produced by a species of Coccus (manniparus) which inhabits the tree, and this is confirmed by Mr. Malcolmson, who in a note I received from him some time since observes that the Persian manna known by the name of "gen," is formed by an insect in that way, and is not found on the upper branches or leaves, but only on the larger branches covered by those minute insects, and *none is formed near wounds or cracks in the bark*. This was particularly observed by Colonel Frederick in Persia, in a latitude not much south of Mount Sinai, and his account corresponds with that of a traveller who saw it in the same country both on a Tamarisk and on the small oak of Kermanshaw.

It is remarkable that the secretion should be unknown in Egypt and Arabia, where the T. gallica would seem to be common. Forskahl, who says it is the *Tarfa* of the Arabs, takes no notice of any manna being produced by it, and Mr. Malcolmson informs me that he could gain no intelligence of manna being produced by the Tamarisk in any of the south and west coasts of Arabia and Upper Egypt. He observed the trees frequently secreting salt, but not sugar. I must however add,

that the plant this gentleman found the Arabs calling Turfa was T. orientalis, not T. gallica, as appeared from the specimens he brought home. The bark of T. gallica is slightly bitter and astringent. The galls and young shoots of this and some other species or varieties are highly astringent and used both in medicine and in dyeing in India.

OCHNACEÆ.

Nat. syst. ed. 2. p. 129.

GOMPHIA.

Petals 5. Stamens 10: filaments scarcely any: anthers long, pyramidal, erect, opening at the apex by a double pore. Ovaries distinct. — Racemes from the apex of a leaf-bearing branch. *W. and A.*

423. G. angustifolia *Vahl. symb.* ii. 49. *DC. prodr.* i. 736. *W. and A.* i. 152. — G. zeylanica *DC.* l. c. Ochna malabarica *DC.* l. c. Ochna zeylanica *Lam.* Walkæra serrata *Willd.* i. 1145. *DC. prodr.* i. 737. Meesia serrata *Gærtn.* i. 344. t. 70. (*Burm. Zeyl.* t. 56. *Rheede* v. t. 48.) — Ceylon and continent of India.

Leaves elliptic-oblong, acuminated at both ends, slightly serrated, shining. Racemes compound. Sepals broad, oval, shorter than the petals. Carpels obovate, reniform. *W. and A.*— Root and leaves bitter; employed in Malabar in decoction in milk or water, as a tonic, stomachic, and anti-emetic.

SIMARUBACEÆ.

Nat. syst. ed. 2. *p.* 129.

QUASSIA.

Flowers hermaphrodite. Calyx short, 5-parted. Petals 5, much longer, arranged in a tubular form. Stamens 10, longer than the petals. Ovaries 5, placed on a receptacle broader than themselves; styles the same number, distinct at the base, there united into 1 very long one, terminating in a nearly equal 5-furrowed stigma. Fruit drupaceous. *A. de J.*

424. Q. amara *Linn. f. suppl.* 235. *Amæn. acad.* vi. 421. t. 4. *Woodv.* t. 77. *S. and C.* iii. t. 172. *DC. prodr.* i. 733. *Lodd. bot. cab.* t. 172. — Surinam, Guayana, Colombia, Panama.

Leaves alternate, unequally pinnate; leaflets in 2 pairs, opposite, entire, smooth, elliptical, acute at each end; petiole winged, jointed, with the joints obovate. Racemes long, 1-sided, simple, terminal, rarely branched. Flowers large, scarlet, distant; pedicels bracteate at the base, jointed below the apex, and there having 2 little bracts. — Wood intensely bitter. Lund and others assert that this does not yield the Quassia chips of the European druggists, but refer them to Picræna excelsa. But Guibourt says that the wood of both the root and stem of this Quassia is imported in the form of white scentless very light cylinders 1–2 inches in diameter; and that the Picræna wood is inferior in quality. I learn however from Mr. Lanæ who resided for many years in Surinam, that although large quantities of Quassia were exported 20 or 30 years since, yet that for many years none has been collected for that purpose, and he did not hear of a single instance of its shipment during the 10 years he passed in Surinam. Quassia wood is in fact no longer used even in that Colony as a medicine, being thought to have some bad properties along with its intense bitter. The flowers are however still infused in wine or water as a stomachic.

SIMARUBA.

Flowers unisexual. Calyx small, cup-shaped, 5-toothed or parted. Petals 5, longer, spreading. ♂. Stamens nearly equal to the petals, arranged around a receptacle bearing at its apex 5 very minute lobes (rudiments of ovaries) or sometimes none. ♀. Ovaries 5, placed on an even disk, surrounded at the base by 10 short hairy scales (rudiments of stamens). Styles the same number, short, distinct at the base, there united into one crowned by a broader 5-lobed stigma. Fruit 5 drupes.

425. S. amara *Aubl. guian.* t. 331 and 332. p. 860. — Quassia Simaruba *Linn. suppl.* 234. *Lam. ill.* t. 343. f. 2. *S. and C.*

iii. t. 171. *Woodv.* t. 76. Simaruba officinalis *DC. diss. ochn. ann. mus.* xvii. 323. *prodr.* i. 733. *Macfady. Jamaica* i. 198.— Sandy moist places in Guayana and Cayenne ; common on the Port-Royal Mountains, Jamaica.

A tree with long horizontal creeping roots and a trunk 60 feet high branched at the summit. Leaves alternate, pinnated ; leaflets alternate 2–9 on each side, oval, smooth, firm, mucronate ; petiole of the largest leaves as much as 14 inches long. Flowers some male others female, mixed upon branched scattered panicles, very small. Petals stiff, sharp-pointed, whitish, fixed between a membranous disk and the calyx. Filaments each arising out of a small rounded velvety scale. Capsules 5, ovate, blackish, disjoined, placed on a fleshy disk, with a rather fleshy pericarp. *Aubl.*— Bark of the root and stem yields a whitish juice. The bark of the root is stripped off, and sent to Europe for sale. In Cayenne the decoction which is bitter, purgative, and even emetic, is used in fevers and diarrhœa. The wood has similar properties but is less active. The Jamaica plant which being dicœcious may be another species, although Dr. Macfadyen represents it as agreeing with Aublet's figure, has an inodorous bitter bark which yields its properties to both alcohol and water. It has been remarked that the infusion is more bitter than the decoction. It acts as a tonic and is used in dyspepsia, diarrhœa, chronic dysentery and all cases of impaired tone of the alimentary canal. *Macfadyen.* I see no justification for changing Aublet's specific name of *amara* into *officinalis.*

426. S. versicolor *Aug. de St. Hil. pl. us.* No. 5. *fl. bras.* i. 70. — Plains of Brazil in the western part of the province of Minas Geraes. (Paraiba.)

Leaves pinnated ; leaflets oblong-elliptical, very obtuse, retuse, with a downy midrib. Panicle terminal, lax. Flowers dicœcious, decandrous. — So intensely bitter that no insects will attack the wood.

PICRÆNA.

Flowers polygamous. Sepals 5, minute. Petals 5, longer than the sepals. Stamens 5, about as long as the petals, rather shaggy ; anthers roundish. Ovaries 3, seated on a round tumid receptacle. Style 3-cornered, trifid : stigmas simple, spreading. Fruit 3, globose, 1-celled, 2-valved drupes, which are distant from each other, and placed on a broad hemispherical receptacle.

427. P. excelsa.—Quassia excelsa *Swartz. fl. ind. occ.* ii. 742. *S. and C.* iii. t. 173. Simaruba? excelsa *DC. prodr.* i. 733. *Macfady. fl. jam.* i. 198. Quassia polygama *Lindsay in act. Edin.* iii. 205. — Common on the plains and lower mountains of Jamaica.

A tree, 50–60 feet high. Leaves alternate, unequally-pinnate ; leaflets opposite, short-stalked, oblong, acuminate, unequal at the base, blunt at the apex, veiny glabrous. Racemes towards the ends of the branchlets, axillary, very compound, panicled, subcorymbose, dichotomously branched, spreading, many-flowered. Peduncle compressed,

rufescent, downy. Flowers small, pale, polygamous. Filaments of the, male flower much larger than the petals: in the fertile, of the same length. In the male, merely the rudiments of the pistil: in the fertile, ovaries 3: style longer than the stamens, 3-quetrous, 3-fid. Drupes 3, but only one coming to perfection, size of a pea, black, shining, fixed on a hemispherical receptacle: nut solitary, globose, with the shell fragile. The intensely bitter timber furnishes the Quassia chips of the shops, so extensively employed on account of their tonic stomachic properties. It has been used as a substitute for hops in the manufacture of beer. An infusion of the chips is employed to poison flies.

Mons. Adr. De Jussieu has long since shown that this plant is not a Simaruba. It appears better at once to give it a name than to let it remain as a spurious species in a genus to the character of which it does not answer.

NIMA.

Flowers hermaphrodite. Calyx 5-parted, permanent. Petals 5, oblong. Stamens 5, with the filaments dilated at the base. Ovaries 5, united, hairy, placed on a thick receptacle bearing the petals at the base. Styles 5, united, distinct and revolute at the apex. Capsules 5, or by abortion 2–3, roundish, 1-seeded. Embryo large, without albumen. *A. de J.*

428. Nima quassioides *Hamilt. A. de J. rutac.* 134. — Simaba quassioides *Don. prodr.* 248. — Nepal, Himalaya Mountains.

Leaves unequally pinnated, in 4 pairs; leaflets oblong, acuminate, serrated. Flowers in corymbose panicles. — As bitter as the Quassia of South America. *Royle essay, &c.* p. 8.

RUTACEÆ.

Nat. syst. ed. 2. *p.* 130.

RUTA.

Calyx 4-partite, at length deciduous. Petals 4, longer than the calyx, unguiculate: the limb vaulted, usually waved or jagged. Stamens 8, longer than the petals: filaments subulate, glabrous: anthers ovate, obtuse. Receptacle usually broader than the ovary, marked round with 8 nectariferous pores, bearing the petals and stamens at the base. Carpels 4, partly combined by means of the central axis into one 4-lobed ovary: ovules 6–12 (or rarely 2 collateral), in each cell. Styles 4, distinct at the base, where they spring from the inner angle of the carpels above the common axis, united upwards into a single

pistil, which is attenuated towards the apex. Stigma 4-furrowed not thicker than the style. Capsules 4, partly united, dehiscing internally at the apex. Seeds dotted. — Perennial or suffrutescent herbaceous plants. Leaves alternate, exstipulate, pinnated, or decompound, with pellucid dots. Flowers yellow or rarely white, disposed in terminal corymbs or racemes: the number of parts occasionally augmented by a fourth.

429. R. graveolens *Linn. sp. pl.* 548. *DC. prodr.* i. 710. *Duh. arb.* ii. t. 61. *S. and C.* ii. t. 71. — Common in sterile waste places in many parts of the South of Europe. (Common Rue.)

A glaucous, hairless, erect, herbaceous or half-shrubby plant, with a strong, heavy, unpleasant smell, growing about 2 feet high. Leaves and all the other parts filled with transparent dots, supradecompound, alternate; their lateral lobes linear or nearly so, the terminal ones obovate; the uppermost leaves simply pinnate. Carpels terminal, leafless, trichotomous, cymose. Petals 4, yellow, unguiculate, concave, wavy, a little irregularly toothed. Fruit roundish, warted, 4-lobed, each lobe opening into 2 valves.—Once in repute as an emmenagogue, antispasmodic and anthelmintic. It is still used in the form of "Rue tea" in domestic medicine. It is acrid and stimulant.

EVODIA.

Calyx 4–5-parted. Petals 4–5, equal. Stamens 4–5, smooth; filaments subulate; anthers heart-shaped, moveable. Disk cup-shaped, sinuated. Ovary single, deeply 5-lobed, with 2 collateral ovules in each cell. Style single, very short; stigma terminal, obtuse. Cocci 2-valved, 1-seeded, with a separable 2-valved endocarp.

230. E. febrifuga *Aug. de St. H. plant. us.* No. 4. *pl. rem. bres.* i. 149. *fl. bras.* i. 79. *DC. prodr.* i. 724. Esenbeckia febrifuga *Mart. n. g.* t. 233. — Forests of the province of Minas Geraes in Brazil.

A tree. Leaves trifoliate; leaflets lanceolate elliptical somewhat acuminate. Panicle terminal, downy. Petals 5. Ovary simple, warted. — Bark and young wood extremely bitter and astringent: used with great success in Brazil as febrifuges.

GALIPEA.

Calyx short, cup-shaped, 5-toothed. Petals 5, longer, somewhat unequal, combined or converging into a pseudo-monopetalous corolla. Filaments adhering to the tube of the corolla, either 5–8, of which 2–4 are sterile, or 5 all fertile; anthers oblong, sometimes revolute after flowering. Ovaries more or less united, surrounded at the base by a cup-shaped disk. Styles 5, either distinct or consolidated, each terminated by an obtuse stigma. Capsules by abortion 1–2.

431. G. Cusparia *Aug. de St. H. in DC. prodr.* i. 731. —

Cusparia febrifuga *Humb. tabl. geogr.* Bonplandia trifoliata *Willd. act. berol.* 1802. p. 24. *HB. plant. æq.* ii. t. 57. *S. and C.* iii. t. 149. Angostura Cuspare *R. and S.* iv. 188.— Forests of tropical America.

A tree 60–80 feet high, evergreen, with an ash-coloured bark and a pale yellow box-like wood. Leaves alternate, long-stalked; leaflets 3, sessile, unequal, ovate-lanceolate, acute, smooth, entire, bright-green, gratefully fragrant, with scattered glandular dots. Flowers in axillary and terminal racemes, on a peduncle as long as the petioles. Calyx and corolla white, with fascicles of hairs, seated on glandular bodies on the outside. Anthers with two short appendages.— Said by Humboldt to produce *Angostura bark*, but denied by Dr. Hancock, who assigns it to the following species.

432. G. officinalis *Hancock in med. bot. trans.* 1829. p. 25. t. 2. — Higher lands of the missions of Carony, between 7° and 8° N. lat. It is also well known in the missions of Tumeremo, Uri, Alta Gracia, and Cupapui, which are the southern and back missions of the Orinoko. It lines the roadside in many places between the missions of St. Antoni and Villa Upata. *Hancock.* (Orayuri of the natives.)

Bark smooth. Leaves alternate, 3-foliate; petiole about the length of the leaflets, slightly channelled; leaflets oval, acute at the base, acuminate at the apex, smooth, glossy, bright green, smelling when bruised and fresh like Tobacco, 6–10 inches long, 2–4 broad; some of the leaflets are marked with small whitish round spots. Panicles cylindrical, contracted, stalked, longer than the leaves, with the branches about 3-flowered. Calyx campanulate, 5-toothed, hairy. Corolla white, somewhat curved before expansion, nearly an inch long, downy on both sides; of the 5 petals, two larger than the others. Sterile stamens 5, subulate, tipped with a pellucid watery gland. Fertile stamens 2. Carpels 5, or fewer by abortion, becoming villous as they mature, 2-seeded with a strong elastic separable 2-valved endocarp. — According to Dr. Hancock this, which he found to yield the true Angostura or Carony bark, is essentially different from the Cusparia febrifuga of Humboldt. An excellent account of that bark is given by Dr. Hancock in the transactions of the Medico Botanical Society; "I am fully convinced," says this experienced physician, "from ample experience of the virtues of this bark, that it is one of the most valuable febrifuges we possess, being adapted to the worst and most malignant bilious fevers, while the fevers in which Cinchona is chiefly administered are simple intermittents, for the most part unattended with danger. The natives also use the bruised bark as a means of intoxicating fishes, which affords a very singular coincidence with what is mentioned by Dr. Saunders, of the same use being made of Cinchona bark by the Peruvian Indians."

433. *Malambo Bark*, an aromatic bark with very active bitter astringent febrifugal properties, native of Columbia, the tree of which is unknown, is described by Dr. Wm. Hamilton in the *Med. bot. trans.* 1834. p. 67. It is supposed by Bonpland to be furnished by some plant allied to Galipea.

TICOREA.

Calyx small, 5-toothed. Corolla monopetalous, funnel-shaped; tube long; limb 5-cleft, equal or unequal. Stamens 5–8, of which 2–6 are often sterile; filaments monadelphous, united to the tube; anthers often partly combined, somewhat exserted. Disk cup-shaped, surrounding the ovary; style 1; stigma 5-lobed. Ovary 5-lobed, 5-celled with 2 ovules in each cell.

434. T. jasminiflora *Aug. de St. Hil. pl. rem.* i. 141. t. 14. D. — Woods of Rio Janeiro, especially near the town of Tagoahy, and in the province of Minas Geraes.

A shrub 7–8 feet high. Leaves ternate, stalked; leaflets 1–6 inches long, lanceolate, tapering to the base, acuminate, obtuse, sometimes emarginate, smooth, deep-green, with pellucid dots. Panicles 3–6 inches long, terminal or axillary, with each branch bearing about 6 flowers. Calyx rather downy. Corolla white, downy, glandular, with pellucid dots. — A decoction of the leaves drunk by the Brazilians as a cure for frambœsia.

435. T. febrifuga *Aug. de St. H.* l. c. 142. — Province of Minas Geraes.

Very like the last from which it differs in its stem being generally arborescent, its panicles contracted, its flowers not more than half the size, the bracts more numerous and somewhat foliaceous, and the style more protruded.—Bark intensely bitter, astringent, febrifugal.

BAROSMA.

Calyx 5-cleft or parted, dotted. Disk lining the bottom of the calyx, generally with a short scarcely prominent rim. Petals 5, with short claws. Filaments 10; the 5 opposite the petals sterile, petaloid, sessile, ciliated, obscurely glandular at the apex; the other 5 longer, smooth or hispid, subulate, with the anthers usually furnished with a minute gland at the apex. Style as long as the petals. Stigma minute, 5-lobed. Ovaries auriculate at the apex, usually glandular and tuberculated. Fruit composed of 5 cocci covered with glandular dots at the back.

436. B. crenulata *Willd. enum. suppl.* 12. *Bot. Mag.* t. 3413. — Diosma crenulata *Linn. amœn. ac.* iv. 308. D. crenata *Linn. sp. pl.* 287. D. serratifolia *Burchell and others.* Bucco crenata *R. and S.* v. 414. D. odorata *DC. prodr.* i. 714. D. latifolia *Lodd. Bot. cab.* t. 290. — Cape of Good Hope.

An upright shrub, between 2 and 3 feet in height, with twiggy branches of a brownish purple tinge. Leaves decussate, spreading, about an inch long, oval-lanceolate, on very short petioles, very obtuse, delicately and minutely crenated, quite glabrous, rigid, darkish green, and quite smooth above, with a few very obscure oblique nerves, beneath paler, dotted with glands which are scarcely pellucid, while at every

crenature is a conspicuous pellucid gland; there is also a narrow, pellucid margin round the whole leaf. Peduncles about as long as the leaf, axillary and terminal, chiefly from the superior leaves, single-flowered, often (but not always) bearing a pair of small opposite leaves or bracteas above the middle, each of which has a flower in its axil. Beneath the calyx are 2 or 3 pairs of small imbricated bracteas. Calyx of 5 ovate-acuminate leaflets, green, tinged with purple. Corolla of 5 ovate petals, purple in bud, blush-coloured when fully expanded. Stamens 5, at first erect, then recurved, about as long as the petals. Filaments slightly villous. Anthers oblong. Barren filaments 5, lanceolate, white, rather villous, tipped with a gland, the lower part erect, the upper half spreading. Hypogynous disk, an annular, dark green gland. Ovary very short, abortive (?) covered with 5 lanceolate, fleshy, slightly spreading appendages. Style filiform, curved. Stigma minute. *Hooker.* — One of the plants whose leaves are collected in South Africa by the Hottentots under the name of *Bucku*. They are found to be an excellent aromatic stomachic and very efficacious as a diuretic. The infusion is much praised as a remedy in chronic inflammations of the bladder and urethra and in chronic rheumatism. Several species are collected by the Hottentots according to Thunberg, especially B. betulina and pulchella, and even Adenandra uniflora, to which some Agathosmas and many others may no doubt be added. Sir W.Hooker takes this as the one to which preference is given.

437. B. serratifolia *Willd.* l. c. — Diosma serratifolia *Bot. mag.* t. 456. — Cape of Good Hope.

Leaves linear-lanceolate, acuminate, serrulated, smooth, glandular at the edges, 3-nerved. Flowers lateral, white, upon short axillary bracteate peduncles. — The leaves of this are commonly sold in the shops as Bucku leaves.

438. B. crenata *Eckl. and Zeyhar. enum.* i. 102.—D. crenata *DC. prodr.* i. 714. *Lodd. Bot. cab.* t. 404. copied in *S. and C.* t. 121. — Cape of Good Hope.

Leaves ovate and obovate, acute, serrated, dotted, glandular at the edge. Flowers pink, terminal, on short lateral leafy branches. — This is the sort of Bucku to which De Candolle applies the name of D. crenata, and which is figured by Messrs. Stevenson and Churchill as the true officinal plant.

ZYGOPHYLLACEÆ.

Nat. syst. ed. 2. *p.* 133.

ZYGOPHYLLUM.

Calyx deeply 5-parted, rather unequal. Petals equal to the sepals in length, or larger, unguiculate. Stamens 10, somewhat unequal, scaly at the base. Ovary 5-cornered, 5-celled, placed on a short convex or concave receptacle; the cells containing 2 or

many ovules. Style simple, tapering into a minute stigma. Fruit capsular, 5-cornered or winged, with a loculicidal dehiscence; rarely indehiscent.

439. Z. Fabago *Linn. sp. pl.* 551. *Lam. ill.* t. 345. f. 1. *DC. prodr.* i. 705.— Syria, the Crimea, Barbary.

A smooth, jointed, bright green, herbaceous plant about 2 feet high. Leaves conjugate, opposite; leaflets obovate, obtuse, sessile, oblique. Flowers solitary or in pairs and axillary, or terminal in small clusters, nodding. Sepals with a pale membranous margin. Petals obovate, longer than the calyx, white, with a deep saffron-coloured base. Stamens as long as the petals, with deep saffron-coloured filaments. Fruit pendulous, long, clavate, 5-cornered. — Esteemed in Syria as a vermifuge.

GUAIACUM.

Calyx deeply 5-parted, unequal. Petals 5, longer, unguiculate. Stamens 10, without scales. Ovary stipitate with 2–5 angles, 2–5 cells, and about 8 suspended ovules in a cell. Styles short, acute. Fruit on a very short stalk, somewhat fleshy, angular. Seeds solitary by abortion, smooth, pendulous.

440. G. officinale *Linn. sp.* 546. *Lam. ill.* t. 342. *Swartz. obs.* 168. *DC. prodr.* i. 707. *Woodv.* t. 16. *S. and C.* ii. t. 90. *Macfady. jam.* i. 187. — Various parts of the West Indies.

A tree seldom more than 12 feet high: branches crowded, knobby, short-jointed, flexuose. Leaves opposite, bijugate or trijugate: leaflets sessile, more or less obovate, rounded at the apex, nerved, glabrous; common petiole terete, channelled above. Peduncles axillary, several together, an inch long, 1-flowered, filiform, minutely downy. Sepals 5; two exterior, somewhat broader than the others; all obtuse and hoary with down. Petals 5, light blue, thrice the length of the sepals, oblong, bluntish, internally downy. Filaments 10, twice the length of the sepals, grooved on the back: anthers bifid at the base, curved. Ovary 2-celled, with numerous suspended ovules, compressed; stigma simple. Capsule obcordate, succulent, glabrous, yellow, 2–5-celled. Seeds solitary, roundish, compressed. — Wood excessively hard and compact, yielding *Guaiacum*, a bitter acrid stimulant gum resin partially soluble in water and wholly in alcohol, and employed as a diaphoretic and alterative. It has been found useful in rheumatism, diseases of the skin, leucorrhœa and scrofula. Its action is stimulant and tonic and in large doses purgative. The common tincture of Guaiacum has been employed, diluted with water, to cleanse the mouth, strengthen the gums, relieve toothach, &c.

PORLIERIA.

Calyx deeply 4-parted. Petals 4, rather longer, somewhat unguiculate. Stamens 8, scaly at the base. Ovary placed on a short receptacle, 4-furrowed, 4-celled, with 4 suspended ovules in each cell. Style 4-cleft. Fruit fleshy, globose, 4-lobed, 4-celled. Seeds solitary, smooth, pendulous.

441. P. hygrometrica *R. and P. syst.* 94. *DC. prodr.* i. 707. *A. de J. rutac.* 74. — Waste places in Chili and Peru. (Turucasa.)

A hard-wooded, rigid, scrubby, grey-barked bush. Leaves opposite, usually as if fasciculated in consequence of the shortness of the lateral branches, with 2 short spiny stipules, abruptly pinnated; leaflets closing at the approach of rain, in 4–6 pairs, very small, linear-oblong, emarginate, smooth, sessile; petiole slightly downy. Peduncles clustered and solitary, terminal, downy, 1-flowered. — Properties similar to those of Guaiacum.

XANTHOXYLACEÆ.

Nat. syst. ed. 2. p. 135.

PTELEA.

Flowers unisexual. Calyx short, 4–5-parted. Petals 4–5, longer than the calyx, spreading. ♂. Stamens 4–5, longer than the petals; filaments thickened and hairy at the base, inserted round a receptacle bearing an abortive pistil. ♀. Stamens 4–5, very short, with abortive anthers. Ovary upon a convex receptacle, compressed, 2-celled. Fruit compressed, membranous indehiscent, turgid in the middle, surrounded by an orbicular wing.

442. P. trifoliata *Linn. sp. pl.* 173. *Willd.* i. 670. *Torrey fl.* i. 189. *Duh. arb.* t. 43. — Shady moist hedges and edges of woods, among rocks in the United States.

A shrub 6–8 feet high. Leaves ternate, with pellucid dots; leaflets oblong, acuminate, sessile, downy beneath, crenulate or obscurely toothed. Flowers greenish white in terminal spreading panicles. — Young green shoots anthelmintic. Fruit aromatic and bitter, and a good substitute for hops.

XANTHOXYLON.

Diœcious. Calyx short, 3–4–5-partite. Petals as many and longer than the sepals, very rarely wanting. ♂. Stamens as many as the petals, equal to or longer than them, inserted round the base of the gynophore. Pistillum rudimentary, simple or compound. ♀. Stamens usually wanting, sometimes very short, and either with or without abortive anthers. Ovaries (1–5) as many as the petals or fewer, seated on a globose or cylindrical gynophore: ovules 2 in each cell, suspended, collateral. Styles 1 from the apex of each ovary, either distinct or united at the apex, sometimes very short or scarcely any. Capsules 1–5,

sessile, or stalked on the gynophore (receptacle), 2-valved, 1–2-seeded. Seeds when solitary globose, when in pairs hemispherical, shining and black. Embryo straight, or slightly curved. — Trees or shrubs, usually with prickles on the branches, petioles, and nerves of the leaves. Leaves usually pellucid-dotted, alternate or opposite, simple, ternate, or pinnated either with or without an odd one. Flowers small, inflorescence axillary or terminal, various. *W. and A.*

443. X. Avicennæ *DC. prodr.* i. 726. — Fagara Avicennæ *Lam. dict.* ii. 445. (*Lobel. ic.* ii. t. 133. f. 2.) — China.

Prickly. Leaves unequally pinnated; leaflets 9–13, lanceolate, somewhat entire, smooth, on short stalks. Racemes panicled, shorter than the leaves. — Used in China as an antidote against all poisons; undoubtedly a powerful stimulant.

444. X. fraxineum *Willd.* iv. 757. *Smith in Rees's cyclop.* No. 12. *Bigelow med. bot.* iii. t. 59. *DC. prodr.* i. 726. — Z. ramiflorum *Michx. fl.* ii. 235.—Woods and moist shady declivities in the United States. (Prickly Ash.)

Branches covered with strong sharp prickles arranged without order, though most frequently in pairs at the insertion of the young branches. Leaves pinnate, the common petiole sometimes unarmed and sometimes prickly on the back. Leaflets about 5 with an odd one, nearly sessile, ovate, acute, with slight vesicular serratures, somewhat downy underneath. Flowers before the leaves, in sessile umbels about the origin of the young branches, small and greenish, polygamous. In the males the calyx is 5-leaved, the sepals oblong, obtuse, erect. Stamens 5 with subulate filaments and sagittate 4-celled anthers. Ovary abortive. Hermaphrodite; calyx and stamens like the last, ovaries 3 or 4, pedicelled, with erect, converging styles nearly as long as the stamens. Females apetalous, on a separate shrub. Calyx smaller and more compressed. Ovaries about 5, pedicelled; styles converging into close contact at top, and a little twisted. Stigmas obtuse. Capsules stipitate, oval, covered with excavated dots, varying from green to red, 2-valved, 1-seeded; the seed oval, blackish. — Bark slightly aromatic with a strong pungency; leaves more aromatic resembling those of the lemon in smell. Has a good deal of reputation in North America as a remedy in chronic rheumatism; generally given in decoction. Has also been employed as a topical stimulant, producing a powerful effect when applied to secreting surfaces and to ulcerated parts.

445. X. Clava Herculis *Linn sp. pl.* 1455. *DC. prodr.* i. 727. *Macfady. fl.* 194. — X. Caribæum *Lam.* X. Carolinianum *Gærtn.* (*Sloane* ii. 28. t. 172.) — Common in the West Indies.

A tree about 20 feet high. Stem erect, prickly; branches downy at the extremities. Leaves unequally pinnated in 7–8 pairs; leaflets opposite, oblong-lanceolate, blunt, entire, with a row of pellucid dots near the margin; smooth and shining above, hairy along the veins on the under surface; petioles occasionally prickly. Flowers white, in terminal leafy panicles. — Bark much used in the West Indies in malig-

nant ulcers, both internally administered and externally applied. An infusion reckoned antispasmodic. Tincture found by Dr. Gillespie, a West India practitioner, to be a good febrifuge; according to others the decoction is antisiphilitic.

446. X. alatum *Roxb. fl. ind.* iii. 768.—Nepal and other mountainous countries north of Bengal.

Trunk short. Branches covered with dark brown bark, spotted with small, scabrous, white dots. Prickles stipulary, straight, dark-coloured and sharp. Leaves alternate, unequally pinnate, from 2 to 4 inches long; leaflets from 3 to13, 5or7 the most usual, opposite, sessile, lanceolate, in young plants crenulate, pretty smooth on both sides, with a few pellucid points containing a fragrant juice. Petioles winged. Stipules 0. ♂. Racemes axillary, often compound, shorter than the leaves. Flowers minute, pale yellow. Calyx small, with from 6 to 8 acute divisions. Corolla 0. Filaments 6, 7, 8, much longer than the calyx. A hemispherical gland, with 2 or 3 elevations in the centre, like so many stigmas, in the room of the pistil. ♀. Racemes as in the male. Flowers very minute, greenish yellow. Calyx as in the male. Corolla 0. Stamens 0. Ovaries as many as 5, 3 or 4 more common, 1-celled, containing 2 ovules, attached to the top of the inner angle of the cell. Styles single, shorter than the ovary. Capsules 1, 2, or 3, roundish, reniform, or ovate, of the size of a small pea when recent, when dry wrinkled, and much smaller, short-pedicelled, 1-celled, 2-valved, opening round the apex. — All parts of the plant aromatic and pungent. Seeds used medicinally by the natives. *Roxb.*

447. Z. piperitum *DC. prodr.* i. 725.—Fagara piperita *Linn. sp.* 172. (*Kœmpf.* t. 893.) — Japan (Seo and Sansjo).

A prickly shrub. Leaves unequally pinnated, in 4–5 pairs: leaflets ovate-oblong, crenated. Petiole somewhat winged, jointed. Prickles erect, short, stiff, brown, in the place of stipules. Cymes few-flowered, terminal. Flowers greenish, the size of coriander seeds. Capsules the size of pepper-corns, roundish, finely tuberculated, brown when ripe. Seeds black, shining, solitary, insipid. — A powerful aromatic, used by the Japanese as a condiment in the room of Ginger or Pepper. The active principle chiefly in the fresh leaves, the dry bark and the pericarp. The doctors of the country apply a poultice made of the bruised leaves and rice flour to sore throats.

TODDALIA.

Flowers unisexual. Calyx short, 4–5-toothed. Petals 4–5, longer than the calyx, spreading. ♂. Stamens 4–5, longer than the petals, inserted round the base of the gynophore (receptacle.) Pistil rudimentary, prism-shaped, 5-angled. ♀. Filaments 5, sterile, very short. Gynophore short, 5-furrowed, gland-like. Ovary 1, ovoid, fleshy, 5 (or fewer?) celled: ovules 2 in each cell, superposed. Stigma nearly sessile, peltately 5-lobed. Fruit fleshy, dotted, 2?–5-celled (some of the cells occasionally abortive). Seed solitary in each cell, somewhat angled-reniform. Embryo curved. — Shrubs. Leaves alternate, digitately trifoliate, more or less pellucid-dotted,

with sometimes 2 glands at the base of the leaflets. Flowers in axillary or terminal racemes or panicles. *W. and A.*

448. T. aculeata *Pers. synops.* i. 249. *DC. prodr.* ii. 83. *W. and A.* i. 149. — Paullinia aculeata *Linn. sp. pl.* 524. Scopolia aculeata *Smith ic. ined.* 34. *Roxb. fl. ind.* i. 616. (*Rheede* v. t. 41. *Burm. Zeyl.* t. 24.)—A common bush in many parts of India.

Stem irregular, corky, climbing. Prickles innumerable, scattered over every part of the younger branches, tender shoots, petioles, and nerves of the leaflets, recurved, very acute. Leaves alternate; leaflets ternate, oblong, or broad-lanceolate, notched, emarginate, smooth, 1½ inch long, and ½ or ¾ broad. Petioles channelled. Racemes axillary, generally compound, length of the leaves. Flowers small, white. Calyx inferior, small, glandular, 5-toothed. Petals 5, oblong, spreading. Filaments 5, nearly as long as the petals, spreading. Anthers oblong, incumbent. Ovary ovate, 5-celled, with 2 ovules in each cell. Style short, thick. Stigma 5-lobed. Berry the size of a small cherry, compressed, 5-grooved, orange-coloured, 5-celled. Seed 1 in each cell. — All the parts very pungent, especially the roots when fresh cut. The fresh leaves are eaten raw for pains in the bowels; the ripe berries are fully as hot as black pepper, and with nearly the same kind of pungency; they are pickled by the natives. The fresh bark of the root is administered by the Telinga physicians, for the cure of that sort of remittent commonly called the hill fever. "I conceive every part of this plant to be possessed of strong stimulating powers, and have no doubt but under proper management it might prove a valuable medicine where stimulants are required." *Roxb.*

BRUCEA.

Flowers unisexual. Calyx 4-parted. Petals 4, hardly so long as the calyx. ♂. Stamens 4, short, arranged round a central glandular body. ♀. Stamens 4, sterile. Ovaries 4, placed on a 4-lobed receptacle; each with an acute reflexed style. Drupes 4, each 1-seeded.

449. B. sumatrana *Roxb. fl. ind.* i. 449. *DC. prodr.* ii. 88. — Gonus amarissimus *Lour. coch.* ii. 809. (*Rumph.* vii. t. 15.) — Sumatra, the Moluccas and Cochinchina.

Leaves alternate, unequally-pinnate, from 12 to 18 inches long. Leaflets from 4 to 6 pair, opposite, short-stalked, obliquely ovate-lanceolate, coarsely and obtusely serrated, pointed, villous underneath, from 3 to 6 inches long, very bitter, and somewhat fœtid. Petioles round and villous. Stipules none. Racemes axillary, solitary, from 1 to 6, or 8 inches long, somewhat compound, dark purple, and clothed with a few white hairs. Flowers numerous, very minute, dark purple. Bracts subulate, hairy, very small, and deciduous. Calyx 4-leaved, or deeply 4-parted. Segments small, ovate-lanceolate, deep purple, hairy on the outside, and with the petals becoming reflexed. Petals 4, longer than the calyx, lanceolate, dark purple, and hairy on the outside. Disk a dark purple, 4-lobed, fleshy cup surrounding the base of the ovaries. Filaments 4, short, purple, inserted under the margin of the

disk. Anthers oval, large, deep purple. Ovaries 4, 1-celled, with 1 ovule in each cell attached to the upper and inner side. Styles single, short, recurved, 1 to each ovary. Stigmas simple. Drupes 4, when all come to maturity, size of a small grain of black pepper, smooth, dark purple, 1-celled. — Roxburgh expected the bark of this to be fully equal in efficacy to that of Br. antidysenterica. Dr. Horsfield thinks it would be as serviceable a tonic as Quassia.

450. B. antidysenterica *Mill. ic fasc.* t. 25. *DC. prodr.* ii. 88. — B. ferruginea *L'Herit. stirp.* t. 10. Wooginoos *Bruce's travels*, vol. v. p. 69. with a figure. — In Abyssinia.

Leaflets entire, covered with ferruginous hair on the nerves. Racemes simple, spike-shaped. — Considered in Abyssinia a most valuable remedy in dysentery and severe cases of diarrhœa, but not known in Europe. It has been supposed that a poisonous bark called *False Angostura*, was yielded by this plant; but it now turns out that it is nothing but the bark of the Nux vomica (Strychnos). *Guibourt*, ed. 3, i. 4. All the statements therefore that have been made concerning the danger of Brucea bark and Brucine, belong to Strychnos, and have nothing to do with Brucea itself.

GERANIACEÆ.

Nat. syst. ed. 2. p. 137.

GERANIUM.

Sepals and petals each 5, equal. Stamens 10, of which the 5 fertile ones are alternate with the others and larger. Nectariferous glands at the base of the larger stamens. Awns of the carpels with their inner sides glabrous, at length separating elastically from the base of the axis upwards, and becoming circinately revolute. — Herbaceous or rarely suffrutescent plants. Leaves palmately lobed. Peduncles 1-2 flowered.

451. G. maculatum *Linn. sp. pl.* 955. *Cav. diss.* vi. t. 86. f. 2. *Bigelow med. bot.* i. t. 8. *DC. prodr.* i. 642. — Common in the United States, in low grounds.

Root perennial, horizontal, thick, rough and knobby. Stem erect, round, clothed with reflexed hairs. Leaves spreading, hairy, palmate, with 3, 5 or 7 lobes, variously cut and toothed at their extremities; those of the root on long petioles, those at the middle of the stem, opposite and petioled, those at the top, opposite and nearly sessile. Stipules and bracts subulate. Peduncles round, hairy, tumid at base, generally 2-flowered. Sepals 5, oblong, ribbed, mucronate; the outermost hairy. Petals 5, obovate, not emarginate, light purple, marked with green at the base. Stamens 10, erect or curving outward, the alternate ones a little longer, with nectariferous glands at the base; filaments dilated and monadelphous at base; anthers oblong, deciduous, so that the number frequently appears less than 10. Style straight, as long as the stamens; stigmas 5, at first erect, afterwards recurved. — Root a most powerful astringent, containing considerably more tannin than Kino. According to Bigelow, particularly suited to the treatment of such diseases as continue from debility after the removal of their exciting cause. Tincture an excellent local application in sore throat and ulcerations of the mouth. May be used in powder, extract or tincture.

452. G. Robertianum *Linn. sp. pl.* 955. *E. Bot.* t. 1486. *Curt. fl. Lond.* i. t. 52. *DC. prodr.* i. 644. — A common weed in waste ground, under walls, banks, and everywhere.

Root tapering. Stems several, spreading in every direction, round, leafy, branched, red, brittle and succulent, a little hairy, chiefly on 1 side. Leaves opposite, shining, more or less hairy, on long stalks, ternate, cut in a pedate manner, their outline unequally 5-angled. Peduncles lateral and terminal, each bearing 2 bright crimson or occasionally white flowers. Calyx brownish, hairy, with 10 angles when closed. Petals obovate, entire. Stamens awl-shaped, smooth. Capsule obovate, downy, carinate, curiously marked at the outer edge with elevated interbranching wrinkles. Seeds perfectly smooth and even. — A popular remedy in Wales in nephritic complaints.

OXALIDACEÆ.

Nat. syst. ed. 2. *p.* 140.

OXALIS.

Sepals 5, distinct or united at the base. Petals 5. Stamens 10; filaments slightly monadelphous, the 5 exterior alternately shorter. Styles 5. Stigmas pencilled or capitate. Capsule 5-cornered, oblong or cylindrical.

453. O. Acetosella *Linn. sp. pl.* 620. *Eng. Bot.* t. 762. *S. and C.* i. t. 63. *Woodv.* t. 20. — Common in groves and shady places. (Woodsorrel.)

A small perennial, with a subterranean root-stock, consisting of many scaly joints. Leaves ternate, inversely heart-shaped, hairy. Peduncles radical, single-flowered. Stamens all simple. — This plant is a refrigerant; taken as a salad it forms a good scorbutic; infused in milk to form whey, or in water, it forms a grateful drink in fevers and inflammatory cases. *Pereira.*

CORIARIACEÆ.

Nat. syst. ed. 2. *p.* 141.

CORIARIA.

The character the same as that of the order.

454. C. myrtifolia *Linn. sp. pl.* 1467. *Lam. ill.* t. 822. *Duham. arb.* i. t. 73. *DC. prodr.* i. 739. — Various parts of the basin of the Mediterranean.

Leaves opposite ovate-lanceolate, acute, triple-nerved, rather stalked, smooth. Racemes nearly erect. Sepals 5, ovate, acute, smooth, naked, in a broken whorl. Petals 5, ovate, rigid, fleshy, keeled inside, applied closely to the carpels, green. Stamens 5, about as long as the petals, and alternate with them. Ovaries 5, obliquely converging, opposite the petals, adhering by means of a gynobase, with no style, but each with a long recurved linear stigma; ovules solitary, suspended.— Fruit a dangerous poison, exciting violent fits of tetanus, giving place to apoplectic coma. Senna adulterated with the leaves equally dangerous. Many fatal cases on record.

ROSACEÆ.

Nat. syst. ed. 2. p. 143.

POTENTILLA.

Calyx concave, 4-5-cleft, with 4-5 bractlets. Petals 4–5. Stamens numerous. Achenia numerous, collected into a head on the flattish persistent dry receptacle. Style lateral. Seeds suspended. — Herbaceous or suffrutescent plants. Leaves compound. Stipules adnate to the petiole. Flowers white or yellow, rarely red.

455. P. reptans *Linn. sp. pl.* 714. *E. Bot.* t. 862. *Woodv.* t. 59. *DC. prodr.* ii. 574. *Smith Eng. Fl.* ii. 423. — Common in meadows, pastures and elsewhere.

Root perennial. Stems prostrate, hairy, round, rooting. Leaflets 5, obovate, strongly serrated, hairy, rough. Flowers large, bright yellow, on long hairy axillary stalks. Calyx most hairy at the base; leaflets ovate, about as long as the segments of the calyx but more leafy. Receptacle hairy. — Properties like those of the next species.

456. P. Tormentilla *Sibth. fl. ox.* 162. — Tormentilla erecta *Linn. sp. pl.* 716. *Woodv.* t. 9. *S. and C.* i. t. 26. T. officinalis *E. Bot.* t. 863. — Common in barren pastures, heaths, &c.

Root woody, internally red. Stems slender, weak, often procumbent or scrambling among bushes. Leaves almost sessile; leaflets 3, oblong, acute, deeply serrated, somewhat hairy; stipules smaller than the leaflets, deeply cut. Flowers small, bright yellow, with the parts of the calyx and corolla in fours, on slender hairy stalks much longer than the leaves. Carpels corrugated when ripe. — Root very astringent; in the opinion of some writers it is one of the best medicines of its class, as it produces its astringent effects without causing excitement. Dr. A. T. Thomson recommends it in some kinds of diarrhœa. It was once considered a specific in syphilis.

GEUM.

Calyx flat, permanent; limb in 10, acute, deep segments; 5 alternate ones much the smallest. Petals 5, rounded, undivided or cloven, attached by their claws to the rim of the calyx opposite to its smaller segments, being about equal to the longer ones. Filaments numerous, awl-shaped, from the rim of the calyx, shorter than the corolla. Carpels superior, ovate, compressed, very numerous, in a round head; styles long, lateral, with a joint above the middle; lower part permanent; upper

deciduous; stigmas simple. Achenia ovate, compressed, hairy, each with a long lateral tail, formed of the enlarged, hardened, lower part of the style, terminating in a hook. Receptacle cylindrical, dry, hairy, seated on the permanent reflexed calyx. *Smith.*

457. G. rivale *Linn. sp. pl.* 717. *Eng. Bot.* t. 106. *Smith Eng. fl.* ii. 430. *DC. prodr.* ii. 551. — Meadows and woods throughout Europe.

Root somewhat woody, blackish, creeping, and running deep into the ground; astringent, with the flavour of cloves. Herbage hairy, deep green. Stem 8 to 12 inches high, slightly panicled, otherwise simple. Radical leaves stalked; their terminal lobe very large, rounded, lobed, and sharply crenate; stem-leaves few, stalked, ternate or 3-lobed; stipules of the latter ovate, acute, cut, purplish. Flowers almost pendulous, singularly elegant, growing upright as the fruit ripens. Calyx of a rich purplish brown, erect; subsequently reflexed. Petiole erect, cloven, of a tawny brown. *Smith.* — This and the next are stomachic, and said to be useful medicines in diarrhœa.

458. G. urbanum *Linn. sp. pl.* 716. *Eng. Bot.* t. 1400. *Woodv.* t. 259. *Smith Eng. fl.* ii. 429. *DC. prodr.* ii. 551. *S. and C.* i. t. 36. — Common in hedgerows and woods throughout Europe. (Avens. Herb Bennet.)

Root of many stout brown fibres, astringent, and in some degree aromatic, said to give an agreeable clove-like flavour to beer, and even to wine. Stem 2 feet high, erect, round, rough and finely hairy; branched at the upper part, bearing several flowers. Radical leaves on long stalks, interruptedly pinnate, somewhat lyrate, the odd leaflet rounded, often deeply 3-lobed; stem-leaves ternate, stalked; upper simple, 3-lobed, wedge-shaped; all variously notched and serrated, grass-green, veiny, hairy. Stipules of the stem-leaves very large, rounded, lobed, serrated, leafy. Flowers terminal, solitary, stalked; commonly small, bright yellow, erect. Calyx spreading, reflexed as the fruit advances. Achenia in an ovate head, numerous, ovate, downy, besides a few long coarse hairs about the summit, each tipped with a rigid, purplish, deflexed awn or tail, which is quite smooth, ending in a small sharp hook. *Smith.*

459. Geum canadense *Jacq. hort.* ii. t. 175? (Chocolate Root, Blood Root.)

Root principally, but leaves also, employed in Prince Edward's Island as a mild tonic. It is agreeably bitter and is found particularly useful in the diarrhœa of children. *Med. bot. trans.* 1829. p. 8.

AGRIMONIA.

Calyx inferior, tubular, permanent, with 5 small, acute, permanent marginal segments; the tube subsequently hardened, closed over the seeds and burred with hooks. Petals 5, flat, spreading, notched, each with a small narrow claw attached to the rim of the calyx. Filaments capillary, from the rim of the calyx, shorter than the corolla, indeterminate in number,

from 7 to 20. Carpels 2, sometimes 3, in the bottom of the calyx, ovate, compressed; style lateral, simple, the length of the stamens; stigmas obtuse, undivided. Achenia 2, occasionally 1, or 3, ovate, smooth, compressed, pointed, erect, inclosed in the hardened tube of the calyx.

460. A. Eupatoria *Linn. sp. pl.* 643. *Eng. Bot.* t. 1335. *Woodv.* t. 258. *Fl. Dan.* t. 588. *DC. prodr.* ii. 587. *Smith Eng. fl.* ii. 346. — Common among bushes throughout Europe. (Agrimony.)

Root tapering, reddish, branched at the summit, not creeping; its flavour very astringent. Herb deep green, covered with soft silky hairs, and when slightly bruised exhaling a peculiar, but grateful, aromatic scent. Stem about 2 feet high, scarcely branched. Leaves alternate, a span long, of several pair of coarsely serrated leaflets, with various small intermediate ones; the terminal leaflet more or less stalked, the size of the former; stipules of the upper leaves rounded, palmate. Flowers very numerous, yellow, in a dense tapering spike, with lobed bracts. Calyx of the fruit encircled with a thick whorl of hooked prickles, which attach themselves to any thing that comes in their way, like burs. *Smith.* — Celebrated as a vermifuge; also used in decoction as an astringent gargle and lotion. A common ingredient in "herb teas."

RUBUS.

Calyx flattish at the bottom, 5-cleft, without bracteoles. Petals 5. Stamens numerous, inserted on the calyx along with the petals. Achenia numerous (sometimes only 6), collected into a head on an evidently protuberant and spongy but not fleshy receptacle, at length becoming juicy, and resembling little drupes. Styles slightly lateral from near the apex of the achenia. Seed inverted. — Shrubs, or rather perennial herbaceous plants. Stems usually biennial, often rooting, sometimes unarmed, but more generally prickly. Leaves petioled, sometimes pinnate or palmate, sometimes simple. Fruit eatable.

461. R. villosus *Ait. hort. Kew.* ii. 210. *Bigelow med. bot.* ii. t. 38. *DC. prodr.* ii. 563.—Common in fields in the United States.

Stem tall, branching, prickly, more or less furrowed and angular. Leaves mostly in threes on a channelled hairy petiole; a few solitary, and some quinate; leaflets ovate, acuminate, sharply and unequally serrate, covered with scattered hairs above, and with a thick soft pubescence underneath: the terminal stalked, the two sides one sessile; petiole and back of the midrib commonly armed with short recurved prickles. Flowers in erect racemes with a hairy, prickly stalk; pedicels slender, an inch or 2 in length, with glandular hairs and lanceolate bractes. Segments of calyx ovate, hairy, ending in an acuminate point or a lanceolate leaflet. Petals white, ovate, or oblong, concave, contracted into a short claw at base. Fruit black and shining. — Bark of the root a pure strong astringent. Professor Chapman of Philadelphia considers it among the most active and decidedly efficacious in cholera infantum, diarrhœa, &c.

ROSA.

Calyx inferior, tubular, contracted at the summit, permanent, finally succulent; limb in 5, deep, ovate-lanceolate, pointed, concave, imbricated, permanent or deciduous segments; either all simple, or 2 of them more or less pinnate. Petals 5, inversely heart-shaped, about as long as the segments of the calyx, and attached by broad claws to the rim of its tube, deciduous. Filaments numerous, capillary, much shorter than the petals, from the rim of the calyx within the corolla. Carpels numerous, oblong, lining the tube of the calyx, interspersed with dense silky hairs; styles 1 to each, lateral, smooth or hairy, all passing through the contracted mouth of the calyx; in some cases united into a cylinder; stigmas obtuse. Fruit globular or ovate, formed of the permanent, pulpy, coloured tube of the calyx, closed at the summit, and containing numerous, oblong, angular, hard, bristly achenia, interspersed with rigid hairs. — Shrubs with pinnated leaves and large showy flowers.

462. R. canina *Linn. sp.* 704. *Lindl. mon. ros.* 98. *Woodv.* t. 139. *S. and C.* ii. t. 100. *Eng. Bot.* tt. 992, 2367.—Common all over Europe and the North of Asia.

A soft branched smooth bush, with long green curved rootshoots, covered with equal hooked prickles, without any intermixture of setæ. Leaflets ovate, firm, without glandular pubescence, serrated, with converging teeth. Flowers with leafy bracts. Sepals partly pinnated, usually naked as well as the tube of the calyx. Petals white or pink, Throat of the calyx thick and quite closed up. Fruit red, succulent, truncated in consequence of the fall of the sepals. — From the pulpy fruit of this and probably other allied species the officinal *conserve of Roses* is prepared.

463. R. centifolia *Linn. sp.* 704. *Lindl. mon. ros.* 64. *Redout. ros.* i. tt. 1. 7. 26. &c. — R. provincialis *Mill. dict.* No. 18. — Woods in the eastern parts of the Caucasus.

An erect bush, with the branches pretty closely covered with prickles and glandular bristles of different forms and sizes; the large ones falcate. Shoots erect. Leaflets oblong or ovate, rugose, fringed with glands. Flowers several together, large, drooping, with leafy bracts. Sepals leafy, compound, viscid. Fruit oblong. — The petals are collected for the distillation of *Rose water;* they are laxative and used in infantile diseases.

464. R. gallica *Linn. sp.* 704. *Lindl. mon. ros.* 68. *Redout. ros.* tt. 25. 52. &c. — R. pumila *Linn. suppl.* 262. *Jacq. fl. austr.* t. 198. — Hedges and thickets in various parts of Austria, and the Crimea, &c.

A dwarfish stiff short-branched bush, with the shoots armed with nearly equal uniform prickles and glandular bristles intermixed. Leaflets stiff, elliptical, rugose. Flowers several, together, large erect, with leafy bracts. Sepals ovate, leafy, compound. Fruit oblong. — The petals are astringent and tonic, and are dried for various officinal preparations.

GILLENIA.

Calyx tubular, campanulate, contracted and 5-cleft at the edge. Petals 5, ligulate, rather unequal, inserted in the apex of the tube. Stamens 10–20, very short, enclosed in the tube. Carpels 5, almost united into a 5-celled capsule; style filiform, erect, capitate. Seeds 2 in each cell.

465. G. trifoliata *Moench. meth. suppl.* 286. *Bigelow med. bot.* iii. t. 41. *DC. prodr.* ii. 546. — Spiræa trifoliata *Linn. sp. pl.* 702. *Bot. mag.* t. 489. — Woods in a light soil in the United States.

Stems a foot or two in height, several from the same root, erect, slender, flexuose, smooth, reddish-brown, and branched. Leaves alternate, trifoliate, subsessile, furnished with small lanceolate, slightly toothed stipules at the base; leaflets lanceolate, acuminate, sharply and unequally toothed, the upper ones often single. Flowers few in number, scattered, terminal, nodding, forming a sort of panicle, with long peduncles, occasionally furnished with minute lanceolate bractes. Calyx subcampanulate, or tubular, with the lower half narrowest, the border divided into 5 reflexed acute teeth. Petals 5, the 2 upper ones separated from the 3 lower, white, with a reddish tinge on the edge, lanceolate, unguiculate, contracted, and approximated at base. Stamens about 20 in a double series within the calyx. Capsules 5, diverging, oblong, acuminate, gibbous without, sharp edged within, 2-valved, 1-celled, 1 or 2 seeded; seeds oblong, corresponding in shape to the capsule. — The root is emetic, and possesses properties analogous to those of Ipecacuanha. It requires, however, a larger dose, and is considered uncertain in its operation.

466. G. stipulacea *Nutt. gen. amer.* i. 307. *Barton med. bot.* 71. t. 6., with large ovate-cordate, leafy, gashed and serrated stipules, but otherwise extremely like the last, is reputed to possess the same properties.

SPIRÆA.

Calyx inferior, nearly flat at the base, with 5 acute segments. Petals 5, roundish or oblong, attached by their claws to the rim of the calyx. Filaments more than 20, from the rim of the calyx, capillary; nearly as long as the corolla. Carpels 5, or more, superior, ovate or oblong, compressed, each terminating in a short stout style. Stigmas spreading, obtuse. Capsules as many as the carpels, oblong, pointed, more or less compressed, each of 2 rather membranous valves, and 1 cell. Seeds few, small, oblong, pendulous from the outer margin of each valve.

467. S. Ulmaria *Linn. sp. pl.* 702. *E. Bot.* t. 960. *Fl. Lond.* t. 33. *Smith Eng. Fl.* ii. 368. *DC. prodr.* ii. 545. — Common in meadows and along ditches. (Meadow Sweet.)

Root fibrous, without knobs. Stems 3 or 4 feet high, leafy, branched, furrowed, angular, smooth. Leaves of a few large, pointed, unequally

serrated, veiny leaflets; the terminal one deeply 3-lobed; intermediate ones very small; all white and densely downy beneath. Stipules rounded, deeply toothed. Flowers extremely numerous, cream-coloured, with a sweet but oppressive hawthorn-like scent, in dense, compound cymose panicles. Calyx reflexed. Petals roundish. Stamens numerous. Carpels 6 or 8, sometimes more, spirally contorted, with short styles, and large capitate stigmas. *Smith.* — Taste of the herbage and scent of the flowers aromatic; a fragrant water, forming an agreeable aromatic beverage, may be distilled from the flowers.

468. S. Filipendula *Linn. sp. pl.* 702. *Eng. Bot.* t. 284. *Fl. Dan.* t. 635. *Smith Eng. Fl.* ii. 368. *DC. prodr.* ii. 546. — Common in pastures in elevated situations.

Root woody, with many hard elliptical knobs, through which the fibres are continued; these are black externally, white and farinaceous within. Stem a foot or more in height, round, smooth, leafy principally in the lower part; panicled in a cymose manner at the summit. Leaves chiefly radical, spreading or depressed, smooth, dark green, elegantly pinnate, with oblong, narrow, opposite or alternate leaflets, and as many, or more, small intermediate ones; all deeply, sharply, and unequally cut. Stipules linear, acute, entire, united laterally to the base of each radical footstalk, the stem leaves being furnished with a pair of rounded cut lobes in their stead. Panicle forked, cymose. Flowers on short partial stalks, without bracteas, erect, cream-coloured, tinged externally with red. Petals obovate. Carpels 10 or more, hairy, with short recurved styles, and large blunt stigmas. *Smith.* — Both this and the last are accounted tonics on account of their bitter astringent qualities.

BRAYERA.

Calyx campanulate; limb 10-parted, membranous; half the segments with pinnate veins and thrice as large as the other 5 with 3 veins each. Petals minute, subulate, opposite the larger segments of the calyx. Stamens 12–20, short, inserted into the throat of the calyx. Disk conical, projecting from the throat of the calyx and pierced at the apex to allow the styles to pass through. Ovaries 2, stipitate, each with 1 suspended ovule; stigmas dilated, slightly lacerated.

469. B. anthelmintica *Kunth in Brayer's dissert.* p. 6. *DC. prodr.* ii. 588. — Abyssinia, where it is called Cabotz.

A tree. Peduncles branched, taper, softly hairy, zigzag, bracteate; branches alternate. Bracts solitary entire. Down simple. Flowers in fours, pedicellate, surrounded by an involucre of 4 bracts. Bracts roundish oblong, obtuse, concave, thin and membranous. *Kunth.* — Reported to be a most powerful anthelmintic. Small packets of the dried flowers are sold by the Abyssinians; and according to M. Brayer are an effectual remedy for tænia when all other medicines have failed.

AMYGDALEÆ.

Nat. syst. ed. 2. *p.* 146.

AMYGDALUS.

Calyx tubular or campanulate. Petals 5, spreading: Stamens numerous, inserted into the mouth of the calyx. Drupe velvety, with a separable fleshy epicarp, and a stone which is rugged and pitted. — Young leaves folded flat. Flowers subsessile, solitary or in pairs, earlier than the leaves, proceeding from scaly buds.

470. A. communis *Linn. sp.* 677. *Woodv.* t. 83. *S. and C.* i. t. 43. *DC. prodr.* ii. 531. — Hedges of Barbary, Syria, and the chalky cliffs of Sicily. (Almond Tree.)

A small tree with a pale brown rugged bark. Leaves lanceolate, acuminate, thin, bright light green, serrated, glandular near the base. Flowers sessile, appearing before the leaves, pink or white. Calyx reddish, with blunt segments. Petals variable in size, always much larger than the calyx, ovate, concave, irregularly notched. Stamens spreading, about $\frac{1}{2}$ the length of the petals. Ovary woolly; style simple. Fruit a leathery hoary drupe, with the sarcocarp spontaneously cracking and dropping off the putamen. Stone oblong, or ovate, acute, hard in various degrees, always rugged and pitted with irregular holes. Seed oblong, compressed, ovate, with a brown testa, at the apex of which there is a broad round brown chalaza. Cotyledons very large, plano-convex. — This species produces both the sweet and bitter almonds of the shops, which are only varieties of each other chiefly differing in the quantity of prussic acid their seeds contain. *Sweet Almonds* are scentless and farinaceous, containing a large proportion of oil; they are used in emulsion and confection, and are a common article of food, but are apt to prove indigestible, and to bring on urticaria febrilis. Their skin is irritating, and should always be removed before the almond is eaten. *Bitter Almonds* yield an oil like that of the last variety, which is extremely poisonous. Its distilled water furnishes prussic acid in abundance; and the effects of bitter almonds taken into the stomach are dangerous. Many fatal cases of poisoning from the incautious use of these seeds are recorded by medical writers. Bitter almonds have nevertheless been recommended as a remedy for intermittent fever when mixed with decoction of bark. A liqueur called Mandel amara is fabricated from them by the Italians; but it is unsafe for persons out of health or with weak stomachs to drink it. They also produce urticaria, and have the reputation of being an antidote to intoxication.

471. A. persica *Linn. sp.* 677., the common Peach, abounds in the oil of bitter almonds, especially the flowers and kernels, and these parts are dangerous. Dr. Christison quotes a case

of a gentleman who died in consequence of having swallowed a salad of the flower in order to purge himself; and another of a child which perished after taking a decoction of the flowers to destroy worms.

CERASUS.

A genus differing from Prunus only in its fruit being destitute of bloom, with the stone round instead of acute, and the leaves when in bud folded flat, not rolled up. The leaves are generally flat and smooth. (Cherries and Bird-cherries.)

472. C. Laurocerasus *Lois. Desl. in. Duham. ed. nov.* 5. p. 6. *DC. prodr.* ii. 540. — Prunus Laurocerasus *Linn. sp. pl.* 678. *Woodv.* ed. ii. 185. *S. and C.* ii. t. 117. — Neighbourhood of Trebizonde, now common in gardens every where. (Cherry Laurel, Common Laurel.)

A small evergreen tree, smooth in every part, with pale green shining shoots. Leaves short-stalked, oblong, acuminate, recurved at the point, serrated, coriaceous, shining; with 2 or 4 small yellow glands at the base on the under side. Racemes axillary, erect, stalked, shorter or as long as the leaves, quite simple. Segments of calyx obtuse. Petals concave, roundish, spreading, white. Stamens 20, spreading, as long as the petals. Fruit a round black drupe the size of a small cherry. — The leaves, bark and seeds abound in prussic acid, which exists in great abundance in the distilled water. This is a deadly poison, producing vomiting, great loss of strength, convulsions and death. The oil of laurel is also a virulent poison.

473. C. virginiana *Mich. bor. am.* i. 285. *DC. prodr.* ii. 539. — Prunus rubra *Ait. Kew.* ed. 1. ii. 162. *Willd. arb.* 238. f. 5. t. 1. — Woods of Virginia and Carolina, Alleghany Mountains.

A small slender tree, perfectly smooth in every part. Shoots slender, brownish. Leaves deciduous, ovate-oblong, acuminate, finely serrated, on rather long stalks having 2–4 glands at the apex; no hairs whatever on the under side. Racemes long, erect, terminal, with a solitary flower now and then in the axil of the leaves next the raceme. Bracts inconspicuous. Calyx with sharp shallow segments. Petals white. Drupes small, bright red. — Leaves considered poisonous. Bark a good febrifuge.

474. C. Padus *DC.* — Prunus padus *Linn. sp.* 677. *E. Bot.* t. 1383. (the common Bird-cherry) abounds in the oil of bitter almonds, and consequently is a dangerous poison.

475. C. Capollim *DC. prodr.* ii. 539. — Cool regions of Mexico.

A small tree quite smooth in every part. Leaves evergreen, elliptical, acuminate, finely serrate, with 2 or 3 larger teeth near the base; petioles glandless, or with not more than 1 gland. Flowers as in C. virginiana. Fruit round, black, shining, the size of a Corone cherry. — Bark considered a good febrifuge.

476. C. capricida *Wall. cat.* No. 718. — Prunus undulata *Don. prodr.* 239. C. undulata *DC. prodr.* ii. 540. — Himalaya Mountains.

Leaves ovate-lanceolate, acuminate, finely glandular-serrate, deciduous, thin, quite smooth on each side, light green and shining beneath; petioles without glands. Racemes very finely downy, axillary, but little longer than the leaves. Flowers small, white. Segments of calyx obtuse. — So poisonous as to kill goats in Nepal.

PRUNUS.

Calyx inferior, bell-shaped, deciduous, with 5 obtuse concave segments. Petals 5, roundish, concave, spreading, larger than the segments of the calyx, their short claws proceeding from its rim. Filaments 20–30, awl-shaped, nearly as long as the corolla, from the rim of the calyx within the petals. Anthers short, of 2 round lobes. Ovary superior, roundish; style thread-shaped, terminal, the length of the stamens; stigma orbicular, peltate. Drupe roundish or elliptical. Nut very hard, somewhat compressed, of 1 cell and 2 more or less distinct sutures with an intermediate furrow. Leaves rolled up when young.

477. P. Cocumilia *Tenore prodr. suppl.* ii. 67. *DC. prodr.* ii. 538. *Att. r. ist. incoragg.* iv. 444. *c. ic. fl. neap.* t. 144. — Woods of the lower mountains of Calabria.

Peduncles short, in pairs. Leaves elliptical obovate acuminate at each end, smooth, crenulate; crenatures and peduncles covered with deciduous glands. Fruit ovate-oblong, mucronulate, austere. — The bark of this plant, which seems to be nothing more than a wild state of our domestic Plum, is spoken of in the highest terms as a remedy for the intermittent fevers of Calabria. In Neapolitan hospitals it has been found superior to Cinchona.

478. P. spinosa *Linn. sp. pl.* 681. *Eng. Bot.* t. 842. *Woodv.* t. 84. *DC. prôdr.* ii. 532. *Smith Eng. Fl.* ii. 357. — Common in the woods and hedges of all Europe. (Sloe.)

A rigid bushy shrub, with sharp spinous branches; the bark blackish, a little glaucous and polished. Leaves scarcely an inch long; the earlier ones obovate; all smooth, except when very young. Flowers pure white, copious, earlier than the leaves, solitary, on short simple stalks, each from a small bud at the bases of the leaf-buds. Calyx spreading. Petals with scarcely any claws. Fruit globular, black, rather larger than a black currant, acid, astringent, and very austere, not eatable except when baked or boiled with a large proportion of sugar. — The juice, inspissated over a slow fire, is a substitute for Catechu. In some form or other, this juice is said to be used in factitious or adulterated Port wine. The leaves also are reckoned among the adulterations of tea in England. They possess, in fact, a portion of that peculiar aromatic flavour which exists in Spiræa Ulmaria, the American Gualtheria, and some other plants, and which resembles the

more delicate perfume of green tea. A water distilled from the blossoms of the sloe is said to be used as a medicinal vehicle in Switzerland and Germany. *Smith.*

POMEÆ.

Nat. syst. ed. 2. p. 145.

PYRUS.

Calyx superior concave, in 5 deep, spreading, permanent segments. Petals 5, roundish, concave, much larger than the calyx, and proceeding from its rim, with short claws. Filaments 20, from the rim of the calyx within the petals, awl-shaped, shorter than the corolla. Anthers oblong, of 2 lobes. Ovary inferior; styles 2–3 to 5, filiform, about the length of the stamens. Stigmas simple, bluntish. Apple roundish or somewhat oblong, umbilicated, fleshy, of as many cartilaginous or membranous cells as there are styles. Seeds 2 in each cell, ascending, obovate, flattened at one side.

479. P. Aucuparia *Gœrtn.* ii. t. 87. *Smith Eng. Fl.* ii. 364. *DC. prodr.* ii. 637. — Subus Aucuparia *Linn. sp. pl.* 683. *Eng. Bot.* t. 337. *Fl. Dan.* t. 1034. — Mountainous woods and hedges. (Mountain Ash.)

A handsome tree, of slow growth, with a tough, close-grained, not very hard wood; the branches smooth, round, grayish. Leaves scarcely a span long; leaflets narrow, firm, downy beneath, not cottony when young; afterwards smooth on both sides. Panicles corymbose, broad and flattish, with downy stalks. Flowers white, numerous, with a slight almond-like scent. Petals very concave. Styles 3, or 4, with small obtuse stigmas. Apples like berries, scarlet, globose, very juicy, sour and bitter, of as many cells as there are styles; the sides of the cells pliant and leathery, not cartilaginous or rigid. Seeds 2 in each cell, though only 1 in general becomes perfect. — Flowers bark and root contain so much of the peculiar essential of almonds as to yield fully as much hydrocyanic acid as that procurable from an equal weight of cherry-laurel leaves. *Buchn. rep.* 27. 238.

CYDONIA.

All the characters of Pyrus; except that the cells of the fruit are many-seeded, and the seeds enveloped in a thick soluble mucus.

480. C. vulgaris *Pers. synops.* ii. 40. *Lindl. in Linn. trans.* xiii. 97. *DC. prodr.* ii. 638. — Pyrus Cydonia *Linn. sp. pl.* 687. *Woodv.* t. 79. *Jacq. fl. austr.* t. 342. *S. and C.* ii. t. 115.—South of Europe, introduced originally from Candia. (Quince.)

A small tree, with dark smooth branches. Leaves ovate, obtuse at the base, quite entire, cottony on the under side. Flowers large solitary, with a cottony calyx and bright pink petals. Fruit a turbinate or roundish angular pome, covered with a thin cottony down, extremely austere, but having a peculiar fragrance. — The seeds are officinal for the sake of the mucus they are covered with, and which can be extracted by hot water. The fruit forms an agreeable marmalade, and is sometimes used in the preparation of a domestic wine of some excellence.

SANGUISORBEÆ.

Nat. syst. ed. 2. *p.* 148.

ALCHIMILLA.

Calyx inferior, tubular, permanent; the limb spreading, in 8 segments; 4 outer alternate ones smallest. Corolla none. Filaments 4, from the mouth of the calyx, opposite to the smaller segments, awl-shaped, short. Carpel in the bottom of the calyx, generally solitary; style from the base of the ovary, about the length of the stamens; Stigma capitate. Achenium 1, occasionally 2, elliptical, compressed, naked, covered by the closed permanent calyx. — Flowers small, green, often inconspicuous.

481. A. vulgaris *Linn. sp. pl.* 178. *Eng. Bot.* t. 597. *Smith Eng. Fl.* i. 223. *DC. prodr.* ii. 589. — In dry subalpine European pastures.

Root woody, with long fibres. Stems from 4 to 8 inches high, more or less procumbent, alternately branched, round, hairy, leafy, terminating in numerous little corymbose clusters of green flowers, on smooth, almost capillary, stalks. Radical leaves numerous, on long footstalks, large, roundish-kidney-shaped, bluntly lobed, plaited, serrated; of a fine green above; most hairy beneath; stem-leaves of the same form, but a great deal smaller, alternate, on short stalks, with a pair of large notched stipules to each. Flowers small, green, in erect dichotomous hairy corymbs. — The decoction slightly tonic.

FABACEÆ, or LEGUMINOSÆ.

Nat. syst. ed. 2. *p.* 148.

Tribe I. Papilionaceæ.

ANAGYRIS.

Calyx campanulate, 5-toothed, slightly 2-lipped. Stamens 10, distinct. Vexillum and wings shorter than the dipetalous long carina. Legume shortly stipitate, compressed, many-seeded, 2-valved, irregularly interrupted by contractions. — Shrubs, with ternate leaves. Stipules united into a single one opposite the leaf. Flowers yellow in short racemes.

482. A. fœtida *Linn. sp.* 534. *Lodd. bot. cab.* t. 740. *Sibth. fl. græc.* iv. 59. t. 366. *Gusson. fl. sic.* i. 477. *DC. prodr.* ii. 99. — Calcareous hills and rocks in the southern parts of Europe, common.

A large bush. Leaflets lanceolate-elliptical, rather blunt, with a very short mucro. Standard spotted, streaked beneath. Legumes curved, variously bent, or straight, acuminate, containing from 2 to 7 seeds. Seeds reniform, violet. *Gussone.* — Seeds said to be poisonous like those of Cytisus Laburnum.

BAPTISIA.

Calyx half 4–5-cleft, 2-lipped. Petals 5, nearly equal; the standard bent back at the sides. Stamens 10, distinct, deciduous. Legume ventricose, pedicellate, many-seeded. — North American herbaceous plants. Flowers racemose. *DC.*

483. B. tinctoria *RBr. in hort. Kew.* iii. 5. *Elliott.* i. 467. *Torrey fl.* i. 441. *DC. prodr.* ii. 100. — Podalyria tinctoria *Willd.* ii. 503. *Bot. Mag.* t. 1099. Sophora tinctoria *Linn. sp. pl.* 534. — Common in open sandy woods in the United States.

Root perennial. Stem 2-3 feet high, very much branched, somewhat glaucous. Leaves alternate; common petiole scarcely a line long, without stipules at the base; leaflets about ½ of an inch long, rounded at the extremity, cuneate at the base; stipules minute, deciduous. Flowers in a loose terminal spike or raceme; pedicels articulated at the base. Calyx subcampanulate, ¼ cleft; the upper segment broader. Corolla bright yellow; vexillum roundish, crenulate, reflexed on the sides; wings obovate; keel of 2 obovate petals slightly united. Stamens nearly equal, as long as the keel; filaments slender, smooth; anthers

small, oblong, incumbent. Ovary smooth, pedicellate, tapering into a slender style; stigma simple. Legume short, inflated, gibbous, on a long stipe, of a dark blueish colour. Seeds small subreniform. *Torrey.* — Yields indigo of indifferent quality. Roots and herbage antiseptic, subastringent, cathartic and emetic. *Barton.* ii. 57.

GENISTA.

Calyx bilabiate, the upper lip 2-partite, the lower 3-toothed; or 5-lobed, the 3 lower being united almost up to the tip. Vexillum oblong; keel oblong, straight, not completely enclosing the stamens. Stamens monadelphous. Legume flat, compressed, or occasionally rather turgid, with many or sometimes few seeds, not glandular. — Shrubs with yellow flowers.

484. G. tinctoria *Linn. sp. pl.* 998. *Smith Eng. fl.* iii. 263. *DC. prodr.* ii. 151. *Eng. Bot.* t. 44. *Fl. Dan.* t. 526. — Common in meadows and groves in many parts of Europe.

Root woody, creeping widely. Stems depressed, with numerous ascending, rarely recumbent, straight, furrowed, leafy, smooth branches. Leaves scattered, nearly sessile, elliptic-lanceolate, convex, of a deep shining green, a little hairy at the edges and midrib, at least while young. Flowers on short axillary stalks, crowded about the summits of the branches, with a pair of small awl-shaped bracts, a little below the base of the deeply cut, smooth, angular calyx. Petals of a uniform bright yellow. Odd stamen very deeply separated. Legume nearly cylindrical, with numerous seeds. — Chiefly employed in dyeing. The whole plant affords a good yellow colour, and with woad a good green. Ray says the milk of cows feeding upon it is rendered bitter, which flavour is communicated to butter and cheese. *Smith.*

CYTISUS.

Calyx bilabiate; the upper lip generally entire, the lower somewhat 3-toothed. Vexillum ovate, broad. Carina very obtuse, enclosing the stamens. Stamens monadelphous. Legume plano-compressed, many-seeded, not glandular. — Small trees or shrubs, with ternate leaves and yellow, purple or white flowers.

485. C. Laburnum *Linn. sp. pl.* 1041. *Jacq fl. austr.* t. 306. *DC. prodr.* ii. 153. *Bot. Mag.* t. 176. (*Hall. helv.* n. 360.) — Mountains of Switzerland and Savoy. (Common Laburnum.)

A small green-branched tree. Young shoots downy. Leaves on long stalks; leaflets rather glaucous, ternate, nearly sessile, oval, mucronulate, a little downy on the underside, the terminal one larger than the others; petioles and subulate stipules downy. Racemes pendulous, 6 inches long, terminal, many-flowered, fragrant, downy. Calyx campanulate, oblique, pushed inwards at the base, downy. Corolla large, clear yellow. Legumes downy, linear, flat, thickened at each suture, rather contracted between the seeds. Seeds oblong, compressed, shining, smooth, deep greenish black. — Seeds highly poisonous, possessing narcotico-acrid properties. This is supposed to be owing to the presence of an active principle called Cytisin.

486. C. alpinus *Mill. dict.* No. 2, the Scotch Laburnum of gardens, perhaps a variety of the last, has no doubt similar properties.

487. C. scoparius *Link enum.* ii. 241. *DC. prodr.* ii. 154. — Spartium scoparium *Linn. sp. pl.* 996. *fl. dan.* t. 313. *Eng. Bot.* t. 1339. *Fl. Lond.* v. t. 52. *Woodv.* t. 89. *S. and C.* ii. t. 67. Genista scoparia *Lam. dict.* ii. 623. — Common in dry sandy thickets, hedges, and fields. (Common Broom.)

A large bushy shrub, with copious, long, straight, angular, dark-green, smooth, tough branches. Leaves deciduous, scattered, stalked, ternate; the upper ones generally simple; leaflets uniform, obovate, obtuse, entire; silky when young. Fl. axillary, solitary, or in pairs, on simple stalks, longer than the leaves, large and handsome, of a deep golden yellow; sometimes tinged with orange; more rarely of a uniform pale lemon-colour. The swelling ovary soon splits the tube of the filaments. Legume brown, flat, above an inch long, nearly smooth at the sides, but fringed with harsh hairs at each margin. Seeds about 15 or 16. *Smith.* — Decoction of the young tops diuretic and cathartic; seeds said to be emetic. Mead and Cullen found them useful in dropsy.

ANTHYLLIS.

Calyx tubular, 5-toothed, permanent after flowering, more or less bladdery and inflated. Wings and keel of the corolla about the same length as the vexillum; stamens monadelphous. Legume ovate, 1–2-seeded, rarely oblong-linear, and many-seeded, always covered by the permanent calyx. *DC.*

488. A. Hermanniæ *Linn. sp. pl.* 1014. *Bot. mag.* t. 2576. *DC. prodr.* ii. 169. — Aspalathus creticus *Linn. sp.* 1002. Spartium spinosum *Alp. exot.* t. 26. Cytisus græcus *Linn. sp.* 1043. — Syria, Candia, and other Mediterranean islands.

A much branched spiny smooth shrub. Leaves subsessile, simple and trifoliate; leaflets oblong cuneate smooth or with close-pressed hairs. Heads few-flowered, nearly sessile in the upper axils. Flowers small, yellow. — Roots diuretic.

489. A. vulneraria *Linn. sp.* 1012. has had a great reputation as one of the best of styptics.

TRIGONELLA.

Calyx campanulate, 5-cleft. Vexillum and alæ nearly equal, spreading in the form of a 3-petalous corolla: keel very small, spreading. Stamens diadelphous (9 and 1). Legume continuous, oblong, compressed or cylindrical, acuminated, many-seeded. — Herbaceous plants, with a heavy penetrating odour. Leaves trifoliolate, the terminal leaflet stalked. *W. and A.*

490. T. Fœnum Græcum *Linn. sp. pl.* 1402. *Ach. Rich. bot. med.* 549. *DC. prodr.* ii. 182. *W. and A.* i. 195. — South of Europe, and India; but in the latter only known in a cultivated state.

Annual. Stem erect, simple. Leaflets obovate, obsoletely toothed; stipules lanceolate, falcate, entire. Flowers sessile, solitary or in pairs. Calyx hairy, the teeth subulate, the length of the tube. Legumes elongated, compressed, longitudinally reticulated, falcate, with a long beak about half the length of the legume. Seeds large, ovate, and wrinkled; the radicle prominent. *W. and A.* — A decoction of the seeds used as an emollient, poultices are made with their flour. Only used in veterinary medicine.

MELILOTUS.

Calyx tubular, softly 5-toothed. Corolla deciduous: keel simple; alæ shorter than the vexillum: the keel and the alæ cohering, free from the stamen-tube: vexillum free. Stamens diadelphous (9 and 1). Style terminal filiform. Legumes globose or ovoid, longer than the calyx, coriaceous, scarcely dehiscent, 1– or few-seeded. — Herbaceous annual or perennial plants. Leaves trifoliolate; leaflets often toothed, the terminal one stalked. Stipules connate with the petiole. Peduncles axillary. Flowers racemose, shortly pedicellate, white or yellow. Fruit pendulous. *W. and A.*

491. M. officinalis *Willd. enum.* 790. *DC. prodr.* ii. 186. *Ach. Rich. bot. med.* 550. *W. and A.* i. 196. — Trifolium Melilotus officinalis *Linn. sp. pl.* 1078. *Fl. dan.* t. 934. — Common in hedges in the midland and southern parts of Europe.

Stem erect branched; branches very much spreading. Leaflets lanceolate oblong, obtuse, remotely serrated; stipules setaceous. Teeth of the calyx unequal, the length of the tube. Vexillum brown, striated, and with the wings as long as the keel. Legumes 2-seeded, obovate, deeply pitted and wrinkled, somewhat hairy, becoming black, and rather gibbous; style filiform, the length of the legume. Seeds unequally cordate, *DC.* — The decoction is emollient and occasionally employed on the continent in lotions and enemas. The odoriferous principle very fugacious; it was asserted by Vogel to be benzoic acid, but according to Guibourt and others it is Coumarine the aromatic principle of the Tonka Bean.

TRIFOLIUM.

Calyx tubular, permanent, glandless, 5-cleft, with subulate segments. Keel shorter than the wings and vexillum, and all growing into a monopetalous corolla. Stamens diadelphous. Legume small, scarcely dehiscent, often ovate, 1–2-seeded, shorter than the calyx and covered by it; rarely oblong; 3–4-

seeded, and something longer than the calyx. — Herbaceous plants. Leaflets 3-nate or quinate. Flowers capitate, sometimes with a cup-shaped involucre.

492. T. alpinum *Linn. sp. pl.* 1080. *Sturm deutschl. fl.* i. *fasc.* 15. *DC. prodr.* ii. 204. *Hall. helv. n.* 369. — Alps of Europe.

Quite smooth. Stems very short, thick, subterraneous. Petioles long; leaflets 3, linear-lanceolate, rather obtuse, toothletted; stipules very long and narrow, linear, acute. Heads umbellate, on long stalks; pedicels very small, rather whorled. Calyx campanulate; the segments equal, very long, setaceous, much shorter than the corolla. Legumes 2-seeded. *DC.* — The roots possess the same properties as liquorice.

PSORALEA.

Sepals 5, combined to the middle into a permanent 5-cleft calyx; the tube usually covered with glands; divisions acuminated, the lowest one sometimes longer than the others. Stamens 10, usually diadelphous (9 and 1), the tenth sometimes connected with the others at the base. Legume the length of the calyx, indehiscent, 1-seeded, sometimes ending in a beak. — Shrubs or herbaceous plants, usually warted from glandular tubercles. Leaves of various forms. Stipules adnate to the base of the petiole. Inflorescence various. Flowers blue, white, or purple. *W. and A.*

493. P. corylifolia *Linn. sp. pl.* 1075. *Burm. fl. ind.* 172 t. 49. *DC. prodr.* ii. 218. *W. and A.* i. 198. — Various parts of India.

Herbaceous, erect. Leaves simple, roundish-ovate, occasionally slightly cordate at the base, repand-toothed; stipules narrow-lanceolate, recurved. Racemes dense, spike-like, usually short and capituliform, on long axillary solitary peduncles. Pedicels much shorter than the calyx, about three together from each bractea. *W. and A.* — Seeds considered in India stomachic and deobstruent.

INDIGOFERA.

Calyx 5-cleft; segments acute. Vexillum roundish, emarginate: keel furnished with a subulate spur on both sides, at length often bending back elastically. Stamens diadelphous (9 and 1). Style filiform, glabrous. Legume continuous, 1 or more-seeded, 2-valved. Seeds usually truncated, separated by cellular spurious partitions. — Herbaceous or shrubby. Stipules small, free from the petiole. Peduncles axillary. Flowers racemose, purple, blue, or white; many of the upper ones of each raceme frequently becoming abortive. Leaves various, usually unequally pinnated or digitate: hairs, either all or some of them, adpressed and attached by their middle. *W. and A.*

494. I. tinctoria *Linn. sp. pl.* 1061. *Willd.* iii. 1237. *DC. prodr.* ii. 224. *Roxb. fl. ind.* iii. 379. *W. and A.* i. 202.— Ind. indica *Lam. enc.* iii. 245. *illustr.* t. 626. f. i. I. sumatrana *Gærtn.* t. 148. f. 2.— East Indies; common in Liguarea in the West Indies according to Dr. Macfadyen.

Suffruticose, erect, branched, sprinkled with short whitish pubescence. Branches terete, firm. Leaves pinnated; leaflets 5–6-pairs, oblong-obovate, cuneate at the base, slightly decreasing in size towards the apex of the leaf; stipules subulate, erect or incurved. Racemes shorter than the leaves, sessile, many-flowered. Flowers small, approximated at the base of the raceme, more distant and deciduous towards the apex. Calyx-segments broad, acute. Legumes approximated towards the base of the rachis, nearly cylindrical, slightly torulose, deflexed and more or less curved upwards: sutures thickened. Seeds about 10, cylindrical, truncated at both ends. *W. and A.* —A decoction of the root used as a lotion effectually destroys vermin; the juice of the young branches mixed with honey is recommended for aphthæ of the mouth in children; and Indigo in powder, sprinkled on foul ulcers is said to cleanse them. The disease in poultry, known by the name of *yaws*, is cured by the application of a solution of Indigo by means of a rag. *Macfady. fl. jam.* i. 251. Indigo is also used in epilepsy, and erysipelas. *Med. Gaz.* xx. 172. Moreover the valuable dye obtained from it is a highly dangerous vegetable poison. It is, however, by no means confined to I. tinctoria. The following are equally important in regard to their dyeing qualities:—

495. I. Anil *Linn. Mant.* 272. yields much of the Indigo of the West Indies. The powdered leaf used in hepatitis. *Ainslie.*

496. I. argentea *Linn. Mant.* 27. is the species cultivated for Indigo in Egypt.

497. I. cærulea *Roxb. fl. ind.* iii. 377. was said by Roxburgh to produce the finest indigo he knew.

CLITORIA.

Calyx 5-cleft, furnished at the base with pretty large very obtuse bractlets. Vexillum large, rounded. Stamens diadelphous (9 and 1), inserted with the corolla a little above the base (not into the bottom) of the calyx. Style somewhat dilated at the apex. Legumes linear, compressed, straight, 2-valved, united with the base of the style, 1-celled, many-seeded, often with cellular partitions between the seeds.— Climbing herbaceous plants. Leaves unequally pinnated: leaflets often 1 pair, more rarely 2–3 pairs, generally furnished with partial stipules at their base. Flowers axillary, pedicellate, large, white or blue or purple, often resupinate. *W. and A.*

498. C. Ternatea *Linn. sp. pl.* 1026. *Bot. Mag.* t. 1542. *DC. prodr.* ii. 233.—Ternatea vulgaris *HBK.* vi. 415. (*Rumph.* v. t. 31. *Rheede* viii. t. 38.) — Various parts of both the East and West Indies.

Stem twining, pubescent. Leaflets in 2–3-pairs, oval or ovate; partial stipules setaceous. Peduncles short, axillary, solitary, 1-flowered. Bractlets large, roundish. Flowers resupinate. Legumes slightly pubescent. *W. and A.* — Roots are emetic.

PUERARIA.

Calyx campanulate, with two deciduous bractlets at its base, somewhat 2-lipped: the upper lip entire or slightly 2-toothed; the lower trifid. Corolla papilionaceous: keel straight, obtuse: vexillum obovate. Stamens monadelphous below the middle, the tenth often free upwards. Legume flat, compressed, attenuated at the base, pointed with the style, 2-valved, continuous. Seeds several. — Twining shrubs. Stipules deciduous, free from the petiole. Leaves trifoliolate: leaflets large, ovate, acute, reticulately veined, with partial stipules at their base. Racemes compound, branched. Flowers pedicellate, in pairs or threes. *W. and A.*

499. P. tuberosa *DC. prodr.* ii. 240. *W. and A.* i. 205. — Hedysarum tuberosum *Roxb. fl. ind.* iii. 363. (*Banks ic. Kæmpf.* t. 25.) — Circar mountains.

Root tuberous, very large. Stems twining, woody, running over high trees, &c. Leaves alternate, stalked, ternate. Leaflets roundish, pointed, entire, downy, from 6 to 12 inches each way. Petioles channelled, from 6 to 12 inches long; Stipules of the petioles cordate; those of the leaflets subulate. Racemes simple or branched, as long as the leaves, from tuberosities caused by the cicatrices of the old leaves, erect, round, smooth. Flowers numerous, ternate, pretty large, blue. Legumes from 2 to 6-jointed, pendulous, compressed, pointed, much contracted at the joints, very hairy.—The root peeled and bruised into a poultice is employed by the natives of the mountains where it grows to reduce swellings of the joints.

GLYCYRRHIZA.

Calyx naked, tubular, 5-cleft, bilabiate; with the 2 upper lobes united more than the others. Vexillum ovate-lanceolate, straight; keel 2-petalous or 2-parted, straight, acute. Stamens diadelphous. Style filiform. Legume ovate or oblong, compressed, 1-celled, 1–4-seeded. — Perennial herbaceous plants, with extremely sweet roots. Leaves unequally pinnated. Racemes axillary. Flowers blue, violet, or white.

500 G. glabra *Linn. sp. pl.* 1046. *Ach. Rich. bot. med.* 557. *DC. prodr.* ii. 247. *Woodv.* t. 169. *S. and C.* iii. t. 134. — Liquiritia officinalis *Mœnch. meth.* 132. — South of Europe, in a light deep soil. (Liquorice).

Root cylindrical, running to a considerable length and depth, bright brown on the outside, yellow inside, soft and succulent. Stem erect, 2 feet high, smooth, of a dull glaucous gray colour. Leaves unequally

pinnate; leaflets generally about 13, oval, entire, obtuse, slightly emarginate, viscid; stipules inconspicuous. Flowers pale lilac in axillary, erect, stalked racemes. Legumes compressed, smooth. — The roots abound in a saccharine mucilaginous matter, which is slightly bitter, and readily soluble in water. A powder and the well known common extract, are prepared from it; the decoction in different forms is a common remedy for coughs, and hectic or phthisical cases.

501. G. echinata *Linn. sp. pl.* 1046. has a root with similar properties, but in a less degree.

TEPHROSIA.

Calyx without bractlets, about equally 5-toothed or 5-cleft. Vexillum large, roundish, usually silky or pubescent on the outside, spreading or reflexed: keel obtuse, cohering with the alæ. Stamens variously united, monadelphous, or diadelphous, the upper filament sometimes half-united with the others. Style filiform. Stigma terminal. Legume generally sessile, and flatly compressed, linear, many-seeded: valves usually flat. Seeds compressed. — Shrubs or herbaceous plants, erect, or rarely climbing? Stipules free from the petiole, lanceolate or subulate, never sagittate. Leaves unequally pinnated, sometimes reduced to a single leaflet. Racemes terminal, axillary, or opposite to the leaves. Flowers white or purplish. *W. and A.*

502. T. purpurea *Pers. synops.* ii. 329. *DC. prodr.* ii. 250. *W. and A.* i. 213. Galega purpurea *Linn. amœn.* iii. p. 19. (*Burm. zeyl.* lxxvii. t. 32.). — Sandy lands on the coast of Coromandel.

Shrubby, somewhat erect, much branched; branches glabrous, pubescent, or slightly villous. Leaves pinnated; leaflets cuneate-oblong or lanceolate; upper side usually glabrous, under more or less pubescent; stipules subulate from a broad base. Racemes opposite the leaves peduncled, often longer than the leaves, many-flowered. Flowers on pedicels longer than the bracteas, 2–3 together. Calyx pubescent; segments about the length of the tube, subulate. Corolla about 3 times the length of the calyx tube: vexillum silky, bent back from near its base. Legumes slightly compressed, spreading, linear, slightly falcate, obtuse with a short point, at length pubescent or glabrous. *W. & A.* — Root bitter; a decoction prescribed by Indian doctors in dyspepsia, lientery and tympanitis.

503. T. Apollinea *DC. prodr.* ii. 254. — Galega Apollinea *Delil. ægypt.* 144. t. 53. f. 5. — Egypt and Nubia.

Suffruticose, spreading, covered with close-pressed down. Leaflets in 2–3 pairs, obovate-oblong, emarginate, silky underneath. Racemes opposite the leaves and of the same length. Legumes erect-spreading, 6–7-seeded, minutely downy. *DC.* — The leaves often found mixed with those of Senna. It is commonly cultivated for its indigo in Nubia, according to Mr. Hoskins.

504. T. Senna *HBK.* vi. 458. *DC.* ii. 253.— Popayan, on the banks of the river Cauca.

Branches somewhat angular, smooth. Leaflets in 4 pairs, obovate-oblong, emarginate, mucronate, slightly downy and glaucous. Racemes opposite the leaves, 1-leaved at the base. Flowers in fascicles. Legumes nearly erect, and the calyxes rough with down. — Leaves used instead of Senna by the people of Popayan.

505. T. toxicaria *Pers. synops.* ii. 328. *DC. prodr.* ii. 249. *Macfady. fl. jam.* i. 225. — Galega toxicaria *Swartz fl. ind.* 1278. *Tussac, fl. antill.* t. 20. (*Plum. ic.* t. 135.) — Cayenne; common in Jamaica; supposed to be of African origin.

An erect shrubby plant, 4–5 feet high; extremities of the branches angular-furrowed, covered with brown down. Leaflets stalked, nearly 2 inches in length, and 4 lines broad; stipules subulate, ¼ of an inch in length. Racemes terminal: axis triangular, velvety. Flowers shortly pedicelled, in clusters of 4–6, white with a purplish tinge. Calyx bilabiate, with acute divisions; upper lip 2-fid; under 3-partite. Standard externally covered with a brown silky pubescence. Stamens sub-monadelphous, i. e. the 10th stamen adhering to the rest for only a short distance above the base. Legume sessile, 2–3 inches long: seeds oblong, light brown, variegated with black. — Employed in Jamaica for the purpose of poisoning fish in rivers. The young branches with the leaves pounded, and sometimes mixed with quick lime, are thrown into a pool of some mountain stream, and have an almost immediate effect. The fish are observed to become stupified, and as it were intoxicated, and to rise to the surface, floating there with their belly upwards, so as to be readily taken by the hand. It has been remarked that the larger fish recover gradually from the effects of the poison, but that the younger fry perish. The practice has therefore been generally discountenanced. It has been suggested that the action of the plant upon the human system would resemble that of Digitalis, and might prove, in a climate where that plant does not grow, a desirable substitute. As the roots of Tephrosia leptostachya, and the leaves of T. Senna, are purgative, it is probable that the plant before us may act as an evacuant, combined with some peculiar depressing influence on the nervous system. *Macfadyen.*

SABINEA.

Calyx cup-shaped, campanulate, truncate and nearly entire. Corolla papilionaceous; keel very blunt, rather shorter than the vexillum, compelling the stamens to roll up in a gyrate manner. Stamens diadelphous; the free one and 4 others half as short again as the remainder. Style filiform, smooth, rolled up with the stamens. Legume stipitate, compressed, linear, long, many-seeded, mucronate with the style. — West Indian unarmed shrubs. Leaves abruptly pinnated; leaflets smooth, mucronate. Pedicels fascicled, 1-flowered. Flowers purplish. *DC.*

506. S. florida *DC. prodr.* ii. 263.— Robinia florida *Vahl. symb.* iii. p. 89. t. 70. — The West India islands of St. John, St. Thomas, Tortola and Crab island.

Leaflets 8–9 pairs, elliptical-oblong. Flowers appearing before the leaves. — The violet flowers are reckoned poisonous. *Schomburgh in Linnæa*, ix. 512.

AGATI.

Calyx campanulate, slightly 2-lipped; upper lip with 2, under with 3 short obtuse broad teeth. Corolla papilionaceous. Vexillum oval, oblong, shorter than the oblong alæ: keel large, falcate, obtusely acuminated, its petals free at the base and apex. Stamens diadelphous (9 and 1), slightly protruded: sheath with large auricles at the base. Style filiform. Legume attenuated at the base into a stalk, linear, elongated, a little compressed, many-seeded, much contracted between the seeds, but not jointed. Seeds separated by cellular partitions. *W. and A.*

507. A. grandiflora *Desv. journ. bot.* iii. 120. *DC. prodr.* ii. 266. *W. and A.* i. 215. — Æschynomene grandiflora *Linn. sp. pl.* 1050. Coronilla grandiflora *Willd.* iii. 1145. Sesbana grandiflora *Pers. syn.* ii. 316. (*Rheede* i. t. 51. *Rumph.* i. t. 76). — Common in all the hot parts of India.

A small tree of rapid growth and short duration. Stipules lanceolate. Leaves abruptly pinnated; leaflets many pairs. Racemes axillary, 2–4-flowered. Flowers very large. Legumes pendulous, upwards of a foot long. — Bark powerfully bitter and tonic.

PISCIDIA.

Calyx campanulate, 5-fid. Keel obtuse. Stamens monadelphous, with the tenth free at the base. Style filiform, smooth. Legume stipitate, linear, furnished with 4 longitudinal membranous wings, interrupted by contractions between the seeds. Seeds oval, compressed: hilum lateral; embryo curved; radicle bent down upon the cotyledons.

508. P. Erythrina *Linn. sp.* 993. *Jacq. amer.* 206. *Swartz. obs.* 277. *HBK.* vi. 382. *DC. prodr.* ii. 267. *Macfady. jam.* i. 258. — Erythrina piscipula *Linn. sp. ed.* 1. 107. (*Sloane* ii. t. 176. f. 4 and 5. *Lam. illustr.* t. 605. f. A.) — Spanish Main, West Indies, common. (Jamaica Dogwood.)

A tree about 20 feet high. Leaflets 3–4 pairs, with an odd one, oblong or obovate, rounded at the base, downy on both sides when young, but smooth when old. Racemes compound, axillary and terminal, with a 3-cornered downy stalk. Flowers whitish, tinged with purple, a little earlier than the leaves, with 2 oblong scarious deciduous bracts about the middle of each stalk. Calyx minutely downy. Vexillum emarginate, greenish in the middle. Stipe of the legume much longer than the calyx; its wings undulated and irregularly lacerated. — Tincture of the bark most powerfully and remarkably narcotic and diaphoretic. A specific in the removal of pain produced by carious teeth. Bark astringent and irritating. See Dr. Hamilton in Burnett's outlines p. 684 for an account of this very energetic plant; the bark of whose root is a common fish-poison in Jamaica.

COLUTEA.

Calyx 5-toothed. Vexillum spread open, with 2 callosities, larger than the obtuse keel. Stamens diadelphous. Stigma lateral, below the apex of a hooked style. Style bearded longitudinally at the back. Legume stipitate, ovate, boat-shaped, inflated, membranous. — Unarmed shrubs. Stipules small, on the stem. Leaves unequally pinnate. Racemes axillary, few-flowered; rather shorter than the leaves. *DC.*

509. C. arborescens *Linn. sp.* 1045. *Bot. mag.* t. 81. *DC. prodr.* ii. 270. — Hedges and thickets in the middle and south of Europe. (Bladder Senna.)

A large loose-branched bush, with thin deciduous ash-gray bark. Leaves smooth or nearly so; leaflets in 3–4 pairs, short, oblong, retuse, equal-sized, very slightly stalked; stipules triangular, acuminate, membranous. Racemes axillary, shorter than the leaves, 3–4-flowered near the apex. Bracts minute, acute. Pedicels about the length of the calyx. Calyx campanulate, tapering to the base, slightly pubescent; with shallow acute teeth. Flowers bright yellow, whole-coloured. Pods distinctly stipitate, smooth, pale green or becoming purple at the side most exposed to light; cracking with a slight report when suddenly and violently compressed. — Leaves purgative; used for adulterating Senna.

ASTRAGALUS.

Calyx 5-toothed. Corolla with an obtuse keel. Stamens diadelphous. Legume 2-celled or $\frac{1}{2}$ 2-celled, in consequence of the dorsal suture being turned inwards. *DC.*

510. A. verus *Oliv. voyage.* iii. t. 44. *DC. prodr.* ii. 296. — A. gummifer, β hispidulus *DC. astr.* 85. — Persia.

Leaflets 16–18, linear, hispid; stipules at first downy, afterwards smooth. Flowers in clusters of 2–5, axillary, sessile. Calyx tomentose, obtusely 5-toothed; otherwise according to De Candolle this differs little from the next species. — The principal part of the Tragacanth used in Europe is said by Olivier to be furnished by this.

511. A. gummifer *Lab. journ. phys.* 1790. p. 46. *ic. DC. astr.* 85. *prodr.* ii. 296. — On Lebanon.

Stem shrubby, about 2 feet high, slender, nearly erect, smooth, branched; branches straggling, taper, hoary with wool. Petioles hard, rigid, spiny, smooth, permanent; stipules 2, adhering to the petiole, smooth, sheathing, broad, ovate, somewhat acute; leaflets 8–12, opposite or alternate, sessile, smooth, oblong, acute. Flowers 3–5, sessile, axillary, produced all round the branches. Bracts withinside the stipules, solitary, keeled, membranous, smooth. Calyx very woolly, cylindrical, 5-cleft; segments acute, woolly, equal. Corolla yellowish, scarcely longer than the calyx; vexillum oblong, broad, emarginate,

rather longer than the wings; wings stipitate, auricled at the base of the limb; keel obtuse, shorter than the wings. Ovary villous, style straight. Legumes woolly, inflated, flattened on the upper edge, ending in a mucro recurved downwards. *DC.* — Labillardière reported that this produces Gum Tragacanth on Lebanon; but it is found that its gum is white and more transparent than that of commerce; neither does it dissolve so well in water, and therefore is inferior in quality. It now appears upon the testimony of Olivier that the gum of commerce is obtained from A. verus.

512. A. Tragacantha *Linn. sp. pl.* 1073, which is A. massiliensis *Lam. dict.* ii. 320, is said by De Candolle to yield no Tragacanth.

513. A. creticus *Lam. dict.* i. 321. *DC. astr.* n. 91. t. 33. — Candia, on Mount Ida.

Leaflets 10–16, oblong, acute, downy; petioles permanent, spiny. Flowers streaked, purple, axillary, sessile, clustered. Calyx 5-parted with feathery setaceous lobes rather longer than the corolla. — A small quantity of Tragacanth is furnished by this species; M. Th. Martius thinks it is the sort that is received in the form of threads or slender strips; while he ascribes the cake Tragacanth to A. verus.

CORONILLA.

Calyx campanulate, short, 5-toothed; the superior teeth approximated and partially united. Claws of the petals distinctly longer than the calyx; keel acute. Stamens diadelphous. Legume tapering, slender, finally separating into oblong 1-seeded joints. Seeds ovate or cylindrical. — Shrubs or herbaceous plants. Leaves unequally pinnated. Peduncles axillary, bearing an umbel of stalked flowers. *DC.*

514. C. Emerus *Linn. sp. pl.* 1046. *Willd.* iii. 1149. *DC. prodr.* ii. 309. (*Hall. helv.* 389. *Mill. dict. ic.* t. 132. f. 1.) — Common all over the South of Europe. (Scorpion Senna).

A small bush. Branches deep green, strongly furrowed, quite smooth. Leaflets 2–3 pairs, obovate, retuse or obtuse, when young rather downy; stipules ovate, acute, very much shorter than the first joint of the petiole. Peduncles axillary, 2–3-flowered, slender, erect, as long as the leaves. Calyx slightly downy, only half the length of the claws of the petals. Corolla deep bright yellow. Legume a long while before its joints drop in pieces. — Leaves cathartic like those of Senna, but less active.

515. C. varia *Linn. sp.* 1048. *Crantz austr.* t. 432. *Willd.* iii. 1153. *DC. prodr.* ii. 310. *Bot. Mag.* t. 258. — (*Clus. hist.* ii. 237. f. 2.) — Meadows and waste places of the south of Europe and the Crimea.

A smooth, spreading herbaceous plant. Leaflets 9–13, oblong, mucronate; the lowest close to the stem; stipules very small, acute. Umbels 16–20-flowered. Legumes erect. — Leaves diuretic and cathartic. Juice said to be even poisonous.

ARTHROLOBIUM.

Calyx ebracteate, tubular, nearly equally 5-toothed. Keel of the corolla very small, compressed. Stamens diadelphous. Legume taper, consisting of numerous, 1-seeded, indehiscent, cylindrical, truncated joints. — Smooth European herbaceous plants. Leaves unequally pinnated. Stipules 0, or concrete into a single bidentate one opposite the leaf. Flowers yellow, capitate, without a leafy bract. *DC.*

516. A. scorpioides *DC. prodr.* ii. 311. — Ornithopus scorpioides *Linn. sp. pl.* 1049. *Cav. ic.* i. t. 37. — South of France, Italy and Spain, in corn-fields and similar places.

An annual erect plant. Leaves ternate; leaflets at the side very small, roundish, placed close to the stem, terminal one very large and oval; stipules concrete, sheathing. Peduncles longer than the leaves, with about 4 flowers. Legumes somewhat incurved and knotted. — Leaves vesicant.

ORMOCARPUM.

Calyx furnished with 2 persistent bracteoles at its base, 5-cleft, and more or less evidently bilabiate; all the segments acute. Corolla papilionaceous; vexillum broad, entire: keel obtuse, the petals slightly cohering at the back. Stamens diadelphous (9 and 1, or 5 and 5). Legume stalked, composed of several joints; joints oblong, attenuated at both ends, a little compressed, marked longitudinally with striæ and warts, separating readily from each other, 1-seeded. — Shrubs. Leaves simple, or unequally pinnated: leaflets not furnished with a prickly point, glabrous. Racemes short, few-flowered, axillary. *W. and A.*

517. O. sennoides *DC. prodr.* ii. 315. *W. and A.* i. 216. — Hedysarum sennoides *Willd.* iii. 1207. *Roxb. fl. ind.* iii. 364. — Forests, hedges, uncultivated lands, &c. in India.

Branches numerous, irregular; young shoots, petioles, peduncles, pedicels and calyx, covered with a soft kind of glutinous hair; the gluten is of a bright gold colour, and is frequently seen in small, beautiful, distinct, globules at the extremities of the hairs. Leaves pinnate, with an odd one, about 2 inches long. Leaflets alternate, from 4 to 6 pairs, obovate, retuse, slightly mucronate, smooth; stipules of the petioles chaffy, mucronate. Racemes axillary, short, curved, from 3 to 6-flowered. Flowers pretty large, yellow. Calyx evidently 2-lipped. Legumes pendulous, compressed, from 2 to 5-jointed, much contracted at the joints, muricate, glutinous, striated. — Root tonic and stimulant.

ALHAGI.

Calyx 5-toothed, the teeth small and nearly equal in size. Corolla papilionaceous: petals about equal in length; vexillum obovate, folded together; keel straight, obtuse. Stamens diadelphous (9 and 1). Ovary linear, with several ovules. Style filiform, glabrous, acute. Legume stalked, somewhat woody, terete, contracted here and there irregularly with partitions, not separating into distinct pieces when ripe. Seeds reniform. — Suffrutescent or herbaceous spiny plants. Leaves simple. Stipules very small. Flowers few, reddish, arranged singly along the axillary spines.

518. A. Maurorum *Tourn. cor.* t. 489. *DC. prodr.* ii. 352. *W. and A.* i. 232. — Hedysarum Alhagi *Linn. sp. pl.* 1051. *Roxb. fl. ind.* iii. 344. Manna hebraica *Don prodr. fl. nep.* 246. — Deserts of Egypt, Syria, Persia, Mesopotamia, India. (Camel's thorn.)

An erect, spiny shrub, when allowed to grow uninjured, but so continually eaten to the ground by cattle as to be more frequently spreading and herbaceous. Leaves in strong plants oblong or obovate, thick, entire, covered with a fine down, as long or longer than the spines; in weaker or starved specimens, the leaves are much narrower, very much tapering to the base, and considerably shorter than the spines; sometimes the leaves are reduced to mere scales; stipules linear, subulate, ciliated. Spines axillary, in strong plants very straight and rigid, in weak plants slender and flexuose. Flowers alternate, scattered singly upon the spines, red. Calyx silky, with triangular acuminate teeth. Ovary tomentose. Legumes silky, extremely uncertain in size, some with a single joint, others with 2, and some with as many as 9 or 10, contracted between the seeds in a most irregular manner, stipitate or sessile. — From the branches of this plant there exudes a sweet substance of the nature of Manna, the Terengjabim of the Arabs, which is gathered by merely shaking the branches. Some writers are of opinion that this was the Manna on which the children of Israel were fed in the wilderness. See *Tourn. voy. Levant*, i. 247, 248.

ERVUM.

Calyx deeply 5-cleft; segments nearly equal, linear, acute, about as long as the corolla. Corolla papilionaceous. Stamens diadelphous (9 and 1): alæ longer than the keel but shorter than the vexillum. Style filiform. Stigma glabrous. Legume oblong, 2–4-seeded. Seeds orbicular or globose. — Leaves abruptly pinnated, terminated by a tendril.

519. E. Ervilia *Linn. sp. pl.* 1040. *DC. prodr.* ii. 367. *Sturm. Deutschl. fl.* i. *fasc.* 32. *ic.* — Vicia ervilia *Willd.* iii. 1103. — South of Europe. (Bitter vetch.)

Smooth, annual. Leaves somewhat cirrhose; leaflets numerous, oblong, mucronulate. Flowers stalked, in pairs. Stipules somewhat lanceolate, toothed. Segments of the calyx equal, very narrow, much longer than the tube. Legumes torulose, 4-seeded, smooth, transversely and finely netted. Seeds roundish, angular. — Seeds poisonous; mixed with flour and made into bread they produce weakness of the extremities, especially of the limbs; horses become almost paralytic. *Virey quoted by Christison*, 841.

LATHYRUS.

Calyx campanulate, 5-cleft; the 2 upper lobes the shortest. Stamens diadelphous. Style flattened, dilated at the apex, shaggy or downy in front. Legume oblong, many-seeded, 2-valved. Seeds globose or angular. — Usually climbing herbaceous plants. Stipules half-sagittate. Leaves cirrhose. Leaflets 1–3 pairs. Peduncles axillary.

520. L. Aphaca *Linn. sp. pl.* 1029. *Eng. Bot.* t. 1167. *Fl. Lond.* t. 51. *Sm. Eng. Fl.* iii. 274. *DC. prodr.* ii. 372. — A common European field-plant.

A little, smooth, pale glaucous-green annual, branching from the root into several weak stems, either procumbent, or climbing by means of numerous, alternate, simple tendrils, each of which springs from between a pair of large stipules, of a broad arrow-shape, nearly entire. There are no true leaves or leaflets, except that now and then, on young plants, near the root, a pair of an elliptical shape, on 1 or 2 rudiments of tendrils, very rarely on a real tendril, may be observed; but these soon wither away. Flowers solitary, on long simple stalks, accompanying some of the tendrils, small, drooping, lemon-coloured. Bracts in pairs, awl-shaped. Teeth of the calyx long and lanceolate, ribbed. Legume about an inch in length, somewhat cylindrical, smooth, with about 6 round seeds. *Smith.* — Seeds narcotic, producing excessive headach, if eaten abundantly in the ripe state. Young and tender they are served sometimes at table like green peas, and then are harmless.

521. L. Cicera *Linn. sp. pl.* 1030. *Jacq. ecl.* t. 115. *Willd.* iii. 1079. *DC. prodr.* ii. 373. — Spain.

Nearly smooth. Stems spreading, winged. Leaflets 2, linear-oblong; tendrils 3–4-fid; stipules half-sagittate, lanceolate, somewhat toothed, ciliated, the length of the petiole, which is not membranous at the edge. Peduncles 1-flowered, longer than the stipules. Bractlets very small. Calycine segments lanceolate, leafy, almost 3 times as long as the tube. Corolla red. Legumes broad oblong, irregularly reticulated, channelled not winged at the back. Seeds 3-cornered, somewhat truncate, brown, smooth. — Flour with which the seeds have been ground up is poisonous. See *Christison*, p. 841.

ABRUS.

Calyx campanulate, obsoletely 4-lobed, with the upper lobe the broadest, or 4-toothed with the upper tooth bifid. Corolla

papilionaceous; vexillum ovate. Stamens 9, monadelphous, cohering at the base with the claw of the vexillum, the 10th wanting. Style short. Stigma capitate. Legume oblong, compressed, 4–6-seeded. Seeds roundish, separated by cellular partitions. — Twining or diffuse shrubs. Leaves abruptly pinnated, with many pairs of leaflets. Pedicels springing several together from large alternate, terete, glandular tubercles along the racemes. *W. and A.*

522. A. precatorius *Linn. syst.* 533. *Roxb. fl. ind.* iii. 258. *DC. prodr.* ii. 381. *W. and A.* i. 236. — Glycine Abrus *Linn. sp. pl.* 1025. (*Rheede* viii. t. 39. *Rumph.* v. t. 32.). — Various parts of India, whence it is thought to have been carried to Africa and America.

Stem woody, twining; bark smooth; young shoots with a few white depressed hairs. Leaves alternate, abruptly pinnate, from 2 to 6 inches long. Leaflets opposite, sub-sessile, from 8 to 15 pairs, linear-oblong, smooth, entire, both ends obtuse, the lower pairs smaller. Stipules of the leaves lanceolate, of the leaflets minute. Racemes axillary, solitary, long-stalked; their peduncle horizontal, thick, and strong, often leaf-bearing. The raceme or flower-bearing part, erect, secund, with the apex projecting in a curve. Flowers numerous, short-stalked, inserted on 2 rows of large, alternate, round, glandular tuberosities, growing on the exterior side of the raceme, pretty large, and of a pale pink colour. Calyx campanulate, obscurely 5-toothed. Vexillum ovate; sides deflected; apex ascending, the length of the wings; wings falcate, projecting horizontally; keel cymbiform, the length of the other petals. Filaments 9, united into a cylinder, with a fissure on the upper side, the distinct portions erect, and alternately shorter. Anthers ovate, small. Ovary minute, hid in the base of the tube of the stamens. Ovary hairy; style very short; stigma headed. Legume of a long rhomboidal shape, protuberant at the seeds, divided by transverse membranes, into as many cells as there are seeds. Seeds generally 4 or 5, spherical, smooth, of a bright shining red, or white, with a black mark at the eye, or more rarely black with a white eye. — Root employed both in the East and West Indies as a substitute for Liquorice. The leaves also have a similar taste, and an extract, resembling that of the Liquorice, and an infusion, much used as a diluent drink, may be prepared from them. The seeds have been incorrectly characterised by Dr. Patrick Browne, as very deleterious; 2 or 3, according to Herman, an author from whom he quotes, being a mortal dose. They are on the contrary, perfectly innocuous, and though hard and indigestible, form, according to Prosper Alpinus, an article of food in Egypt. *Maçfadyen.*

PHASEOLUS.

Calyx campanulate, 5-toothed; or bilabiate, the upper lip 2-toothed, the lower 3-partite. Corolla papilionaceous: keel, with the stamens and style, spirally twisted or circinnate. Legume compressed or cylindrical, 2-valved, many-seeded, with more or less conspicuous cellular partitions between the seeds.

Hilum of the seed oval-oblong. — Herbaceous or suffrutescent plants. Leaves pinnately trifoliolate; leaflets with partial stipules. Racemes axillary. Pedicels usually in pairs, 1-flowered. *W. and A.*

523. P. radiatus *Linn. sp. pl.* 1017. *DC. prodr.* ii. 395. *W. and A.* i. 246. — (*Dill. elth.* t. 315. f. 304.) — East Indies.

Stems diffuse, flexuose, and with the petioles and peduncles very hairy; the hairs long and pointing downwards. Leaflets hairy; lateral ones obliquely ovate, pointed; terminal one rhomboid-oblong, the angle on each side rounded and resembling a small lobe; stipules oblong-lanceolate, pointed, attached below their middle. Peduncles about the length of the petioles. Flowers capitate. Legume very hairy, cylindrical, about 2 inches long and 2 lines broad, 6–8-seeded, spreading. *W. and A.* — Roots narcotic. *Royle.*

524. P. trilobus *Willd.* iii. 1035. *DC. prodr.* ii. 394. *W. and A.* i. 246. *Roxb. fl. ind.* iii. 298. — Dolichos trilobus *Linn. mant.* 101. *DC. prodr.* ii. 399. *Burm. fl. ind.* t. 50. f. 1. D. stipulaceus *Lam. enc. meth.* ii. 300. — East Indies.

Herbaceous, procumbent, diffuse. Petioles long; leaflets much shorter, roundish and entire, or 3-lobed; middle lobe cuneate-ovate or obovate, narrowed towards the base; stipules oblong-lanceolate, attached below their middle; peduncles long, ascending. Flowers few, small, somewhat capitate. Legume cylindrical, glabrous, or slightly hairy. *W. and A.* — Leaves considered by Hindoo practitioners cooling, sedative, antibilious and tonic, and useful as an application to weak eyes.

MUCUNA.

Calyx with 2 very caducous bracteoles as long as the tube, campanulate, bilabiate: upper lip broad, entire or emarginate: lower trifid, the middle segment the longest. Corolla papilionaceous: vexillum cordate, incumbent on the alæ, much shorter than them and the keel, without callosities: alæ oblong-linear, connivent, sometimes slightly cohering together by their spurs between the vexillum and keel: keel straight below, slightly falcate in the upper part, terminated by a smooth polished acute beak. Stamens diadelphous (9 and 1), alternately longer: anthers alternately longer and ovate. Style long and slender; its lower part hairy, upper glabrous. Stigma small. Legume linear, oblong, or roundish, few (1–8)-seeded, with partitions between the seeds, polished within. Seeds oval, roundish, or reniform, with a narrow oblong or linear hilum. — Twining plants. Leaves pinnately trifoliolate; leaflets with partial stipules. Racemes elongated or short and umbel-like, often pendulous when in fruit. Legumes usually densely clothed with rigid brittle sharp hairs. *W. and A.*

525. M. Prurita *Hook. bot. misc.* ii. 348.— Muc. pruriens *Id. suppl.* t. 13. *W. and A.* i. 255. — Carpopogon pruriens *Roxb.*

fl. ind. iii. 283. (*Rheede* viii. t. 35. *Rumph.*vi. t. 142.) — Hedges and banks all over the East Indies.

Leaflets hairy underneath; the middle one rhomboidal and obtuse, the lateral ones dilated on the outer edge. Flowers purple, in compact ovate racemes. Teeth of the calyx short, triangular. Legumes oblong, curved, compressed, not keeled, covered all over with a thick coating of erect, white, stinging hairs, which usually turn black in drying and brown when ripe.

526. M. pruriens *DC. prodr.* ii. 405. *Macfad. fl. jam.* i. 294. *Bot. reg.* 1838. t. 18. — Dolichos pruriens *Linn. sp. pl.* 1020. *Jacq. amer.* 201. t. 122. *S. and C.* iii. t. 179. — Common in woods in the West Indies, along river courses, upon fences, and in waste neglected places.

Leaflets entire, ovate, acute, smooth above, hairy beneath; the lateral ones oblique at the base, the middle one slightly rhomboidal. Racemes lax, many-flowered, interrupted, 1–1½ foot long. Calyx hairy, pink, with narrow lanceolate segments. Flowers with a disagreeable alliaceous smell; vexillum flesh-coloured, wings purple or violet, keel greenish white. Legume about 3 inches long, the thickness of the finger, closely covered with strong, brown, stinging hairs. Seeds oblong, variegated, with a white hilum. — The hairs of these two species constitute the substance called Cowitch, a mechanical anthelmintic. It is administered in mixture with thick syrup, honey or some such substance, in doses of a dessert spoonful, and should be followed by a brisk purgative.

BUTEA.

Calyx campanulate, bilabiate; upper lip almost entire; lower 3-fid. Corolla papilionaceous; petals equally long: vexillum ovate, recurved: keel and alæ incurved. Stamens diadelphous. Style ascending. Stigma small, glandular. Legume stalked, compressed, thin, membranous, with a large solitary compressed seed at the apex. — Unarmed trees or twining shrubs. Leaves pinnately 3-foliolate; leaflets large, roundish-ovate, pubescent or tomentose on the under side, with partial stipules. Racemes many-flowered. Flowers in threes, pedicelled, with 2 bracteoles at or near the base of the calyx. *W. and A.*

527. B. frondosa *Roxb. corom.* i. t. 21. *fl. ind.* iii. 244. *DC. prodr.* ii. 415. *W. and A.* i. 261. — Erythrina monosperma *Lam. encyc.* i. 391. (*Rheede* vi. t. 16. and 17.) — Circars, Travancore, Negapatam.

A tree. Branches very irregularly bent in various directions. Young shoots downy. Leaves alternate, spreading, ternate, from 8 to 16 inches long; leaflets emarginate, or rounded at the apex, leathery, above shining, and pretty smooth; below slightly hoary, entire, the lateral ones obliquely oval, from 4 to 6 inches long, and from 3 to 4½ broad, the terminal one obovate, and considerably larger. Petiole round, when young downy, as long as the leaflets. Stipules of the petioles small, recurved, downy, those of the leaflets subulate. Racemes terminal, axillary, forming tuberosities over the naked woody branchlets, rigid, covered with a

soft, greenish-purple down. Flowers papilionaceous, pendulous, numerous, stalked, fascicled, very large, their ground colour a beautiful deep red, shaded with orange and silver-coloured down, which gives them a most elegant appearance. Pedicels round, about an inch long, jointed near the apex, and covered with the same greenish, velvet-like down. Bractes lanceolate, deciduous, one below the insertion of each pedicel, and two smaller, pressing on the calyx. Calyx campanulate, leathery, 2-lipped; the upper lip large, scarcely emarginate; the under one 3-toothed, covered with the same dark-green down that the racemes and pedicels are covered with. Vexillum reflexed, ovate, pointed, very little longer than the wings; wings ascending, lanceolate, the length of the keel; keel 2-parted, ascending, large, semilunate, the length of the wings and vexillum; filaments 1 and 9, ascending in a regular semicircle, about as long as the corolla. Anthers equal, linear, erect. Ovary short, thick, stalked, lanceolate, downy. Style ascending, a little longer than the filaments. Stigma small, glandular. Legume stalked, pendulous, linear, thin, downy, about 6 inches long. Seed 1, lodged near the point of the legume, oval, much compressed, smooth, brown, about 1½ inch long, and about 1 broad. — Juice, which naturally exudes from cracks and wounds in the bark, hardens into a most beautiful ruby-coloured brittle astringent gum. It dissolves perfectly in water and partially in spirit. Infusions of the flowers dye cotton cloth, previously impregnated with a solution of alum, of a beautiful bright yellow; a little alkali changes it to a deep reddish orange. Lac insects are frequent on the small branches and petioles. Guibourt considers that this plant produces the *Cachou en masse* or *Cachou lucide;* but Mr. Pereira doubts it. *Med. gaz.* xx. 103.

528. B. superba *Roxb. cor.* i. t. 22. *fl. ind.* iii. 247. *DC. prodr.* ii. 415. *W. and A.* i. 261. — Circar mountains.

Root fusiform, very large. Stem twining, as thick or thicker than a man's leg, woody, very long, running over large trees. Bark ash-coloured, pretty smooth. Branches like the stem, but with a smoother bark. Leaves alternate, terminal, remote, very large; leaflets downy, in other respects as in B. frondosa, but much larger; the exterior one is often about 20 inches long, and broad in proportion, the lateral ones somewhat less. Racemes as in the former, but much larger. Flowers also the same, only much larger, and more numerous. Calyx with the divisions longer and much more pointed. Corolla the same. Legumes and seed rather larger. — Sensible properties altogether the same as in B. frondosa.

PTEROCARPUS.

Calyx 5-cleft, somewhat bilabiate. Corolla papilionaceous, glabrous: keel-petals distinct or slightly cohering. Stamens 10, variously combined. Ovary long-stalked. Legume indehiscent, irregular, somewhat orbicular, surrounded by a wing, woody, and often rugose in the middle, 1–3-celled. Seeds solitary in each cell, reniform. — Unarmed trees or shrubs. Leaves unequally pinnated. Racemes axillary or forming terminal panicles. *W. and A.*

529. P. Marsupium *Roxb. corom.* ii. t. 116. *fl. ind.* iii. 234. *DC. prodr.* ii. 418. *W. and A.* i. 266. — P. bilobus *G. Don syst.* ii. 376. — Circar mountains.

Trunk erect, very high, scarcely ever found straight. Bark, with the outer coat brown, spongy, falling off in flakes; inwardly red, fibrous, and astringent. Branches spreading, horizontal, numerous, extending far. Leaves sub-bifarious, alternate, pinnate with an odd one, 8 or 9 inches long. Leaflets 5, 6, or 7, alternate, elliptic, emarginate, firm, above shining, and deep green; below less so, from 3 to 5 inches long and 2 or 3 broad; petioles round, smooth, waved from leaflet to leaflet, 5 or 6 inches long; stipules none. Panicles terminal, very large; ramifications bifarious, like the leaves. Peduncles and pedicels round, a little downy. Bractes small, caducous, solitary below each division and sub-division of the panicle. Flowers very numerous, white, with a small tinge of yellow. Vexillum with a long slender claw, very broad; sides reflexed, waved, curled, veined; keel 2-petalled, adhering slightly for a little way near the middle, waved &c. as the vexillum. Filaments 10, united in 1 body near the base, but soon splitting into 2 bodies of 5 each. Anthers globose, 2-lobed. Ovary oblong, pedicelled, hairy, generally 2-celled; cells transverse, and 1-seeded. Style ascending. Legume $\frac{3}{4}$-orbicular, the upper remainder, which extends from the pedicel to the remains of the style, straight, the whole surrounded with a waved, veined, downy, membranous wing, swelled, rugose, and woody in the centre, where the seed is lodged, not opening; generally 1, though sometimes 2-celled. Seed solitary, kidney-shaped. — Roxburgh suspects this to be the tree that produces *gum kino*, a well-known astringent. The red juice hardens into a dark red very brittle gum-resin, which on being powdered changes to a light brown not unlike powdered peruvian bark. Its taste is strongly but simply astringent. The real kino tree appears however to be the next.

530. P. erinaceus *Lam. dict.* v. 728. *illustr.* t. 602. f. 4. *DC. prodr.* ii. 419. *Fl. senegamb.* i. 229. t. 54. — P. Adansonii *DC.* l. c. P. senegalensis] *Hooker in Gray's trav. in west. afr.* 395. t. *D.* Drepanocarpus senegalensis *N. and E. handb.* iii. 184. — Woods of the Gambia, about Albreda and Isle aux chiens; in Senegal, near Cacundi. (Wegne of the natives.)

A tree 40–50 feet high. Leaves unequally pinnate, smooth above, downy beneath; leaflets 11–15, alternate, distant, on short stalks, ovate-oblong, obtuse or emarginate, wavy at the edge; stipules lanceolate, villous, deciduous. Racemes solitary or clustered, downy, from the old wood, below the young branches, much shorter than the leaves. Flowers yellow. Legume stipitate, compressed, membranous, velvety, sinuated and undulated, prickly on the centre. — When the branches are wounded a red juice flows which hardens upon exposure to the air and becomes a dark-coloured brittle, glittering, astringent substance, the real original *gum kino* of the shops.

531. P. Draco *Linn. mant.* 438. *DC. prodr.* ii. 415. — P. officinalis *Jacq. amer.* 283. t. 183. f. 92. P. hemipterus *Gærtn.* t. 156. f. 2. — Woods of Tierra Bomba near Carthagena, Guadeloupe, &c.

A tree 30 feet high. Leaflets alternate, shining, about 5 on each side and an odd one, oval, rather obtuse, entire, veined, smooth, pale green below; petioles rather shaggy. Legumes nearly smooth. — Bark when wounded yields drops of red juice which soon harden into crimson tears; these are collected under the name of *Dragon's Blood*, but Jacquin states that, although large quantities were once exported from Carthagena to Spain, yet when he was in the former place (middle of the last century) the commerce had almost ceased.

532. P. santalinus *Linn. f. suppl.* 318. *Willd.* iii. 906. *DC. prodr.* ii. 419. *W. and A.* i. 266. — Mountains of Coromandel and Ceylon.

A lofty tree. Leaves alternate, stalked, ternate, rarely pinnate; leaflets alternate, petiolate, the uppermost larger, ovate-roundish, or oblong, entire, emarginate or retuse, smooth above, hoary beneath; stipules 0. Racemes axillary, simple or branched, erect. Bracts 0. Calyx brown. Standard yellow with red veins. Filaments 10, diadelphous. Legume roundish, stalked, falcate upwards, compressed, smooth, keeled on the lower edge: the keel being membranous and undulated. — From this is obtained *Red Sandal wood*, a timber chiefly used by the dyers and colour manufacturers of the present day; but also employed to colour several officinal preparations, such as the compound tincture of Lavender.

Tribe II. Cæsalpinieæ.

Nat. syst. ed. 2. *p.* 153.

ANDIRA.

Calyx turbinate-campanulate, 5-toothed; the teeth nearly equal, acute, erect. Corolla papilionaceous, with a roundish emarginate vexillum longer than the carina. Stamens diadelphous. Ovary containing 3 ovules. Legume stipitate, roundish, hard, 1-celled, 1-seeded, when ripe 2-valved according to Swartz. *DC.*

533. A. inermis *HBK. DC. prodr.* ii. 475. *Macfady. fl. jam.* i. 323. — Geoffræa inermis *Swartz fl. ind. occ.* 1255. *Wright phil. trans.* 1777. 512. t. 70. *Woodv.* t. 112. *S. and C.* iii. t. 144. — Guayana and many of the West India Islands.

A tree of moderate height; branches suberect at their extremities terete, glabrous, ash-coloured. Leaves alternate, about 1 foot in length, unequally pinnate; leaflets 5–8-paired, on short roundish ferruginous downy stalks, oblong-lanceolate, rarely ovate-lanceolate, acuminate, for the most part rounded at the base, entire, glabrous, thin, with the nerves scarcely prominent, about 4½ inches long, and 1 broad; petioles minutely downy. Stipules lanceolate, persistent. Panicles terminal,

and axillary, erect; branches subdivided, spreading, angular, brownish purple, covered with ferruginous down; pedicels very short, 1-flowered, numerous, crowded. Flowers reddish-lilac. Calyx turbinate-campanulate, covered with ferruginous down. Standard and wings unguiculate; keel composed of 2 petals, smaller than the standard. Stamens purple. Ovary stipitate: style subulate, curved: stigma simple. Legume size of a large plum. — Bark anthelmintic; it has a disagreeable smell and a sweet mucilaginous taste. Its effects are drastic, emetic, purgative and narcotic; poisonous in large doses, producing violent vomiting with fever and delirium.

534. A. retusa *HBK. and DC.* l. c. from Cayenne, has similar properties.

CASSIA.

Sepals 5, combined at the base, more or less unequal. Petals 5, more or less unequal. Stamens 10, distinct; the 3 upper rarely fertile, usually with anthers of a different shape from the others and abortive; very rarely only 4–7, and all fertile: anthers dehiscing at the apex by 2 pores or clefts. Ovary stalked. Legume compressed, many-seeded. — Trees, shrubs, or herbaceous plants. Leaves simply and abruptly pinnated; leaflets opposite. Petioles often bearing glands.

535. C. elongata *Lémaire Lisanc. Journ. pharm.* vii. 345. — C. lanceolata *Royle illustr.* t. 37. *W. and A.* i. 288. *Wallich in Madras Journ, Ap.* 1837. p. 354. — Interior of India *Roxb.*; perhaps only naturalised, *W. and A.*

An annual, but with care, it may be made to live through the year, and to assume a suffruticose habit. Stem erect, smooth. Leaves narrow, equally pinnated; leaflets 4–8 pairs, lanceolate, nearly sessile, slightly mucronulate, smooth above, rather downy beneath, with the veins turning inwards and forming a flexuose intramarginal line; petioles without glands; stipules softly spinescent, semihastate, spreading, minute. Racemes axillary and terminal, erect, stalked, rather longer than the leaves; pedicels without bracts. Sepals linear, obtuse. Petals bright yellow. Of the stamens the 5 lowest sterile and small, the 2 next large, curved and perfect, the 3 uppermost minute and gland-like. Ovary linear, downy, falcate, with a smooth recurved style. Legumes pendulous, oblong, membranous, about $1\frac{1}{2}$ inch long, and $\frac{5}{8}$ broad, quite straight, tapering abruptly to the base, and rounded at the apex, deep brown, many-seeded. — The dried leaves form the finest senna of commerce, known by the name of Tinnevelly senna. In the great uncertainty that exists concerning the species from which the acute-leaved sennas are obtained, I take this as the type, partly because I happen to have pretty good specimens for description, and partly because it is possibly the same as the common acute-leaved senna of Alexandria, altered by climate. I cannot think it the C. lanceolata of Forskahl, because it wants the gland upon the petiole of that species, a character of great importance in this genus. It is more probable that this is the "Senna Meccæ Lohaiæ foliis 5–7-jugis lineari-lanceolatis" of Forskahl; which if so will account for its having been raised in India from Mecca senna seeds.

536. C. acutifolia *Delile ægypt.* t. 27. f. 1. — C. Senna *S. and C.* i. t. 30. good. C. medica *Forsk. fl. arab.* p. cxi. — Arabia felix *Forsk.*; Upper Egypt and Nubia, between the Nile and Red Sea.

The only differences that I perceive between this, which furnishes Alexandrian senna, and the last species, consist in the leaflets being ovate not lanceolate, and the legumes much shorter and rounder. — It furnishes the principal part of the senna consumed in this country, and when unadulterated it is one of the best of all purgatives; but is very much mixed, in some samples it is said to the extent of 20 per cent, with leaves of Tephrosia Apollinea, and Cynanchum Argel, and it is even reported to be mixed with Coriaria myrtifolia. All such adulterations are, however, readily detected by any careful observer. The leaves of T. Apollinea are obovate, almost wedge-shaped, of Cynanchum Argel thick, veinless, longer, downy or smooth, and of Coriaria ribbed.

537. C. lanceolata *Forsk.* p. 85. — Surdud, Mohr, and Abu Arisch in Arabia. (Súna of the Arabs.)

Leaflets 1 inch long, in 5 pairs, on short stalks, lanceolate, green; with a sessile gland above the base of the petiole. Racemes terminal, long, pale yellow. Pods linear, villous, compressed, incurved; not seen ripe. — Such are the words of Forskahl, who asserts positively that this is the true Senna of Mecca. It is obvious that the villous pods and glandular petiole are quite at variance with both C. elongata and acutifolia.*

538. C. æthiopica *Guibourt hist. abr. ed.* 3. ii. 219. — C. ovata *Mérat. dict. mat. med.* vol. vi. p. 311. Séné de Nubie *Nectoux voyage dans la haute Egypte* t. 2. — Nubia, Fezzan, south of Tripoli.

I cannot doubt the propriety of distinguishing this kind of Senna, which has not only a gland at the base of the petiole, but another between each pair of leaflets. About 18 inches high; leaflets in 3–5 pairs, pubescent, oval-lanceolate, 7–9 lines long, 3–4 broad, and consequently smaller, shorter and less acute than in C. acutifolia. Legumes flat, smooth, not reniform, rounded, 11–15 lines long, tawny, containing 3–5 seeds. *Guibourt.* — This furnishes exclusively the Senna of Tripoli which according to Guibourt is extremely uniform in its appearance.

539. C. obovata *Coll. mon.* 92. *DC. prodr.* ii. 492.—C. Senna *Linn. sp. pl.* 539. *Lam. illustr.* t. 332. C. obtusa *Wall. herb.* No. 5319. and consequently *W. and A.* i. 288. Senna obtusa *Roxb. fl. ind.* ii. 344. C. Porturegalis *Bancroft* according to *W. and A.* C. Burmanni *Wallich in Madras Journal, April* 1837, p. 354. *Wight* l. c. *July* p. 71. t. 5. — High dry uncultivated lands of Mysore; Egypt; desert of Suez, Nubia, Central

* As this sheet was about to be printed off I was so fortunate as to meet with the C. lanceolata of Forskahl, in a collection of Arabian plants (No. 71), collected by Dr. S. Fischer, in Palm grounds in the valley of Fatmé, flowering at the end of February. The leaflets are in 4 or 5 pairs, never more; oblong and either acute or obtuse, not at all ovate or lanceolate, and perfectly free from downiness even when young; the petioles have *constantly* a small round brown gland a little above the base. The pods are erect, oblong, tapering to the base, obtuse, turgid, mucronate, rather falcate, especially when young, at which time they are sparingly covered with coarse scattered hairs. The species is therefore quite distinct from C. *elongata*, as I at first supposed; and consequently, excellent as the Tinnivelly Senna is, a sort of still finer quality may be expected from India, as soon as this, the true Senna of Mecca shall have been introduced into the Peninsula.

Africa (Oudney), Cape de Verds. Only an introduced plant in the West Indies.

A perennial herbaceous plant, with erect or procumbent smooth stems. Leaves equally pinnate, quite smooth, with no gland upon the petiole; leaflets 4–6 pair, obovate, rounded, but mucronate at the apex, unequal at the base, the uppermost gradually the largest; stipules narrowly triangular, rigid, acute, spreading. Racemes erect, rather lax, axillary, stalked, either longer or shorter than the leaves. Flowers like those of C. lanceolata. Legumes oblong, falcate, membranous, smooth, rounded at each end, with an elevated ridge upon the valves over each side, so as to have an equally interrupted ridge along the middle; towards this ridge the veins of each suture are directed nearly at right angles. — The leaves of this furnish the inferior Senna known by the name of Aleppo and Italian. A comparison of authentic specimens has quite satisfied me that the C. obtusa of Roxburgh from the Mysore is identical with the C. obovata of Africa.

540. C. Tora *Linn. sp. pl.* 538. *DC. prodr.* ii. 493. *W. and A.* i. 290. — C. obtusifolia *Burm. fl. ind.* 95. C. Gallinaria *Coll. mon.* 96. Senna Tora *Roxb. fl. ind.* ii. 340. C. Tagera *Lam. enc.* i. 643. *not of Linn. DC. prodr.* ii. 494. Senna toroides *Roxb. fl. ind.* ii. 341. (*Rumph.* v. t. 97. f. 2. *Dill. elth.* t. 63. f. 73. *Rheede* ii. t. 53). — Mysore, Arabia.

Annual. Stem nearly simple, about a foot high. Leaves abruptly pinnated; leaflets in 3 pairs, obovate-cuneate, mucronulate, slightly hairy, ciliated, shortly stalked, dull deep green above, pale and almost glaucous beneath; a single yellowish cylindrical gland between the lowest pair of leaflets. Racemes short, 3-flowered, axillary. Petals dull yellow, slightly tinged with green. Legumes from 3 to 4 inches long, slender, straight, quadrangular, about 3 or 4-seeded, slightly contracted between the seeds. — Leaves used to adulterate C. obovata, to which it bears a good deal of resemblance. It may however be readily known by its leaflets never being in more than 3 pairs, by their distinctly cuneate form and ciliated margin, by the gland between the lowest pair, and especially by the pods, which are long slender and quadrangular, instead of being flat and falcate.

541. C. medica *Velloz. fl. flum.* t. 62. *Vogel in Linn.* ii. 656. — Brazil.

A shrub. Branches angular, downy or smooth. Leaflets in 2 pairs, ovate or oblong, unequal at the base, acuminate, emarginate, at first covered beneath with a bright gold-coloured down, above very smooth and shining; an acute compressed gland between each pair of leaflets. Racemes corymbose, minutely downy. Legume nearly taper. — Root called "Febra fuge," used instead of Cinchona. *Vogel.*

542. C. alata *Linn. sp.* 541. *DC. prodr.* ii. 492. *W. and A.* i. 287. — C. herpetica *Jacq. obs.* ii. t. 45. f. 2. C. bracteata *Linn. f. suppl.* 232. *DC. prodr.* l. c. Senna alata *Roxb. fl. ind.* ii. 349. (*Rumph.* vii. t. 18.). — Gardens of India, but apparently not indigenous.

Stem erect, often as thick as a man's leg, marked by the cicatrices of the fallen leaves, and the permanent stipules, which appear like prickles.

Leaves scattered, abruptly pinnate, 2 feet long. Leaflets opposite, from 8 to 14 pair, the exterior largest, linear-oblong, obtuse, or emarginate, with a point, smooth, entire, veined; from 3 to 6 inches long, and from 2 to 2½ broad; the lower pair more distant from the next pair than the others above, nearly round and reflexed back on the stem or branches. Petioles channelled, the channel large and formed by 2 thin, firm yellow borders; there is a cross-bar between each pair of leaflets, covered with small dark-coloured bristles and there is no other gland. Stipules auriculate, rigid, pointed, persistent. Racemes terminal and from the exterior axils, long, sometimes bifid, nearly erect. Flowers numerous, simple, large, yellow. Bracts large, 1-flowered, oval, concave, yellow, deciduous. Calyx coloured like the corolla. Legume horizontal, from 5 to 6 inches long, with a broad crenulated wing on each side. — The Telinga and Tamul physicians say that this plant cures all poisonous bites and venereal outbreakings, and also strengthens the body. Fresh leaves often employed to cure ringworm.

543. C. occidentalis *Linn. sp.* 539. *Swartz obs.* 159. *DC. prodr.* ii. 497. *Bot. reg.* t. 83. *Macfady. fl. jam.* i. 344. — (*Sloane* ii. t. 175. f. 3, 4.) — West Indies; common in Jamaica.

An erect shrub, 3–4 feet high: branches few, simple, angular, with 2 furrows passing down from each side of the insertion of each petiole, slightly scabrous from minute curved asperities situated in the furrows. Leaflets shortly stalked, mucronate: petiole angular, furrowed, channelled above, with a small sessile gland near the insertion; stipules lanceolate, falcate. Racemes axillary and terminal, short, usually 3-flowered. Flowers yellow, stalked; bracts lanceolate. Pedicels ½ an inch in length, downy. Legume 4–5 inches long. — A decoction of the root said to be diuretic; that of the leaves, taken internally, and applied externally, to be useful in the cure of the itch, and other cutaneous diseases, in the human subject, and of mange in dogs and horses. The Negroes employ it in the preparation of their baths and fomentations; and apply the leaves, smeared with a little candle grease, to slight sores, as a substitute for adhesive plaster. *Macfadyen.* It is called *Gajamariôba*, in Brazil, and with C. falcata, L. and the *Fedegozo*, or Cassia hirsuta, L., is an extremely common plant, growing every where near habitations, and spreading rapidly. The root greatly stimulates the lymphatic system, and is therefore very beneficial in obstructions and weakness of the stomach, and incipient dropsy, against which disease it is used as a diuretic. *Martius.*

544. C. marilandica *Linn. sp. pl.* 541. *Bigelow med. bot.* ii. t. 39. *DC. prodr.* ii. 498. — (*Dill. hort. elth.* t. 359.) — Rich soils near water from Carolina to New England.

Stems 5 or 6 feet high, round, striated, slightly hairy. Petioles with from 8 to 10 pairs of leaflets, which are oblong, smooth, mucronate, somewhat hairy at the edges. On the base of the petiole is a large ovate shining green gland, terminating in a dark point at top, which is sometimes double. Flowers in axillary racemes, extending quite to the top of the stem. Peduncles slightly furrowed, and marked with minute, blackish, glandular hairs. Sepals yellow, oval, obtuse, the lateral ones longest. Petals 5, bright yellow, concave, very obtuse. Stamens 10; the 3 upper have short abortive anthers; to these succeed 2 pairs of deflexed linear anthers; the remaining 3, or lowermost, taper into a sort of beak, the middle one being shortest. Legumes long, pendulous, linear, curved, swelling at the seeds, and furnished

with slight hairs. — Nearly resembles Senna in its properties. According to Bigelow about $\frac{1}{3}$ more of the leaves of this plant than of true Senna is required to produce a given effect.

CATHARTOCARPUS.

The flowers of Cassia. Legume terete, indehiscent, divided into a number of spurious cells by transverse hard phragmata; cells 1-seeded, filled with pulp. Embryo with an excessively thick bony covering (testa? albumen?). — Trees. Leaves pinnated. Flowers in drooping racemes.

545. C. Fistula *Pers. synops.* i. 459. — Cassia fistula *Linn. sp. pl.* 540. *Gærtn.* ii. t. 147. f. 1. *Woodv.* t. 163. *DC. prodr.* ii. 490. *S. and C.* iii. t. 155. *Roxb. fl. ind.* ii. 333. — Various parts of the East Indies; tropical Africa; introduced into the West Indies.

A tree from 20 to 30 feet high. Leaves pinnate, from 12 to 18 inches long, deciduous. Leaflets from 4 to 8 pair, opposite or nearly so, the lower broad-ovate, the upper oblong, entire, generally obtuse or emarginate, polished on both sides, from 2 to 6 inches long and from $1\frac{1}{2}$ to 3 broad. Petioles round, without glands. Racemes pendulous, simple, from 1 to 2 feet long. Flowers large, bright yellow, fragrant, on long, slender, smooth pedicels. Sepals 5, nearly equal, oval, smooth, much shorter than the corolla. Petals oval, unequal. The 3 lower filaments much longer than the others and having a double curve, but no swelling. Anthers on the 3 long filaments oblong, opening by 2 lines on the face, the other 7 clavate, with pores at the small end. Ovary filiform, smooth, one-celled, containing numerous seeds, which at this period are without any sign of separation, that appearing in the advanced state; style short incurved; stigma conical, smooth. Legume cylindrical, 9–12 inches long, dark blackish brown, terete, smooth, blunt, filled with a viscid black sweetish pulp, interposed between the seeds and the transverse diaphragms. — An extract of the pulp gently laxative; seeds in the dose of 4–6 drachms purgative; roots reputed an excellent febrifuge.

CÆSALPINIA.

Sepals 5, unequal, combined at the base into a somewhat persistent cup, the lower one the larger and slightly vaulted. Petals 5, unequal, unguiculate; the upper one shorter than the others. Stamens 10, distinct: filaments villous and ascending at the base; anthers all fertile. Style filiform. Legume unarmed, compressed, 2-valved, wingless. Seeds roundish, oval, or oblong, compressed. — Trees or shrubs, prickly or unarmed. Leaves abruptly bipinnated. Flowers yellow, racemose, or panicled. *W. and A.*

546. C. Nuga *Ait. hort. Kew.* iii. 32. *DC. prodr.* ii. 481. — Guilandina Nuga *Linn. sp. pl.* 546. (*Rumph.* v. t. 50.) — Moluccas.

A climbing plant, if it grows among trees. Stem unarmed, not thicker than the arm, even at the base. Pinnæ 3–4 pairs; leaflets 2–3 pairs, ovate, acute; their petioles and back ribs all over prickly. Flowers yellow in racemose panicles. Standard with a few red spots. Legumes roundish, oblong, mucronate. Seeds 1–2, flat, black, 4-cornered.—A decoction of the roots used, according to Rumph in calculous and nephritic complaints.

GUILANDINA.

Sepals 5, nearly equal, combined at the base into a short urceolate tube. Petals 5, sessile, nearly equal. Stamens 10, distinct: filaments villous at the base. Style short. Legume ovate, ventricose-compressed, 2-valved, 1–2-seeded, covered with straight prickles. Seeds bony, shining, nearly globose. — Trees or shrubs with hooked prickles on the stem and petioles. Leaves abruptly bipinnated. Flowers spicately racemose. Bracteas elongated. — *W. and A.*

547. G. Bonduc *Linn. sp.* 545. *DC. prodr.* ii. 480. *W. and A.* i. 280. — G. Bonduccella *Linn.* l. c. Cæsalpinia Bonduccella *Flem. in As. res.* ii. 159. *Roxb. fl. ind.* ii. 357. (*Rheede* ii. t. 22. *Rumph.* v. t. 48, 49. f. i.) — Both East and West Indies. (Nicker tree.)

A climbing plant, armed with many sharp, small, recurved prickles. Leaves bipinnate; pinnæ 7 pairs; leaflets 3–8 pairs, ovate oblong, more or less downy, with 1–2 small recurved prickles between them on the underside; stipules large pinnatifid. Bracts lanceolate, reflexed. Racemes simple, above the axils. Legumes prickly, 2-seeded. — The seeds in powder are a powerful tonic.

POINCIANA.

Sepals 5, equal or unequal; united below into a cup-shaped somewhat persistent base. Petals 5, stipulate; the upper one shaped differently from the others. Stamens 10, distinct, much longer than the petals, all fertile, filaments ascending and hairy at the base. Style very long. Legume unarmed, flat-compressed, wingless, 2-valved, several-seeded, intercepted internally between the seeds. Seeds obovate, compressed. Cotyledons flat. — Shrubs or trees, prickly or unarmed. Leaves abruptly bipinnated. Flowers large and very elegant, corymbosely panicled. *W. and A.*

548. P. pulcherrima *Linn. sp.* 554. *DC. prodr.* ii. 484. *W. and A.* i. 282. — Cæsalpinia pulcherrima *Swartz obs.* 165. (*Rheede* vi. t. 1.) — East Indies, whence it was carried to the West Indies. (Barbadoes Flower fence.)

Shrubby, armed, quite smooth. Leaflets obovate-oblong, retuse or emarginate. Flower-buds obovate, obtuse. Calyx smooth on both sides; sepals obtuse, unequal, the lower one arched; æstivation imbricative. Petals fringed, bright orange, very large and long, on long claws. Ovary

smooth. — A decoction of the leaves and flowers has been employed with success against the fevers of Tortola. Root acrid and even poisonous. *Schomburgk in Linn.* ix. 512. The wood makes the best of all charcoal.

The leaves when bruised have a smell resembling that of savine, and the infusion, of either them or the flowers, is considered a powerful emmenagogue, so as even to bring on abortion. The leaves are also said to be purgative, and to have been used as a substitute for senna. The seeds, in powder, are stated to form a remedy for the belly-ache. *Macfadyen.*

HÆMATOXYLON.

Sepals 5, united at the base into a permanent tube. Petals 5, scarcely longer than the sepals. Stamens 10; filaments hairy at the base; anthers without glands. Style capillary. Legume compressed, flat, lanceolate, acuminate at each end, 2-seeded; the sutures indehiscent, the valves bursting longitudinally.

549. H. campeachianum *Linn. sp. pl.* 549. *DC. prodr.* ii. 485. *Macfady. fl. jam.* 332. — (*Sloane* ii. t. 10. f. 1—4.) — Campeachy, common all over the West India Islands. (Logwood.)

A low spreading tree; stem generally crooked and deformed, seldom thicker than a man's thigh; branches somewhat flexuose, terete, covered with whitish dots; in mountain and moist situations unarmed; in the plains or where the tree is stunted, furnished with spines below the leaves. Leaves 2–4 from the same point (an irregular rough tubercular prominence), pinnate, sometimes dividing in a bipinnate manner, at the lowest pair of leaflets; leaflets 4-paired, shortly stalked; obovate or obcordate. Racemes at first about the length of the leaf, afterwards, as the pods form, elongating. Flowers on pedicels half an inch in length, yellow, slightly fragrant. Calyx deeply 5-parted; lobes unequal, thin, membranous, purplish, deciduous; tube short, green, bell-shaped. Petals nearly equal, obovate, wedge-shaped at the base, scarcely longer than the sepals. Stamens alternately short, inserted, as also the petals, on the inside of the margin of the persistent tube of the calyx; anthers ovate. Ovary lanceolate, compressed, 3-seeded; style projecting beyond the stamens and petals; stigma capitate, expanded. Pods compressed, flat, lanceolate, acuminate at both ends, 2-seeded, not opening at the sutures, but bursting longitudinally by a division passing down through both the valves. *Macf.* — Chiefly used by dyers. It is a powerful astringent and may be employed as a substitute for Kino, Catechu, &c. In diarrhœa and dysentery the decoction is used with benefit. *Macf.*

BOWDICHIA.

Calyx turbinate-campanulate, 5-toothed; teeth acute, erect, the upper approximated. Petals 5, distinct; the lateral ones longest, arranged in a somewhat papilionaceous manner. Stamens 10? distinct. Legume stipitate, with 10 ovules, compressed, membranous, with a winged border on the seed-edge, 1-celled, indehiscent. Embryo straight. *DC.*

550. B. virgilioides *HBK.* vi. 376. *DC. prodr.* ii. 519. —

Near Barbula, between New Valentia and Portocapello; in the Llanos of Barcelona, near Villa del Pao; and on the banks of the Oronoco between Carichana and its confluence with the ocean.

A tree. Young branches downy, ferruginous. Leaves unequally pinnated; leaflets about 13, lanceolate-oblong, rounded at each end, often emarginate, entire and rather revolute at the edge, netted, coriaceous, downy on each side, ferruginous on the ribs beneath, 6–7 lines long, 5–5½ lines broad. Racemes terminal, 3 inches long and more, downy. Flowers violet, the size of those of Cercis siliquastrum. Calyx coloured, downy. Petals 5, somewhat papilionaceous, smooth, crisp at the edge. Legumes linear-oblong, somewhat falcate, compressed, tumid in the region of the seeds, membranous, transversely netted, with a narrow membranous margin on the ventral suture, about 2½ inches long by 7 lines broad.

BAUHINIA.

Calyx either 5-cleft, or split up on the lower side and spatha-like. Petals 5, spreading, oblong, slightly unequal. Anther-bearing stamens either 1 and distinct, with 9 monadelphous sterile filaments; or 3–5, with or without 1–7 sterile ones, all united at the base, or distinct. Ovary stalked, containing 2 or more ovules. Style ascending, rarely wanting. Stigma capitate or dilated. Legume 1-celled, 2-valved, several- (rarely 1-) seeded. Seeds compressed, oval; inner seed-coat tumid. Embryo straight; radicle ovate: cotyledons flat. — Trees or shrubs. Leaves consisting of 2 opposite distinct, or united leaflets.

551. B. tomentosa *Linn. sp. pl.* 536. *DC. prodr.* ii. 514. *Roxb. fl. ind.* ii. 323. *W. and A.* i. 295. — (*Burm. zeyl.* 44. t. 18.) — Ceylon, Malabar, Coromandel mountains.

Trunk straight. Branches numerous forming a compact bush. Young shoots shaggy. Leaves bifarious, stalked, roundish, deeply 2-lobed; lobes oval, obtuse, parallel, 3-nerved, softly shaggy underneath; stipules filiform, villous. Peduncles forked, 2-flowered. Flowers large, pale sulphur colour, drooping. Bracts 3, on the outside of the base of each pedicel. Petals oval, the upper one smaller, and sometimes marked on the inside with an oblong deep purple spot. Filaments 10, all fertile. Legume lanceolate, villous, 5–6 seeded. — Dried buds and young flowers prescribed in dysentery, in India.

*** The leaves of several species are employed in Brazil, under the name of *Unha de Boy*, or Oxhoof, as mucilaginous remedies. *Martius.*

TAMARINDUS.

Calyx tubular at the base: limb bilabiate, reflexed: upper lip 3-partite; lower broad, 2-toothed. Petals 3, alternating with the segments of the upper lip of the calyx; 2 of them ovate, the middle one cucullate. Stamens 9–10; 7 very short and sterile;

the other 2–3 longer, monadelphous, bearing anthers. Style subulate. Legume stalked, linear, more or less curved, slightly compressed, 1-celled, 3–12-seeded, the endocarp pulpy. Seeds compressed, bluntly 4-angled, obliquely truncated at the hilum. — Trees. Leaves abruptly pinnated; leaflets many pair. Flowers racemose. *W. and A.*

552. T. indica *Linn. sp. pl.* 48. *Roxb. fl. ind.* iii. 215. *DC. prodr.* ii. 488. *W. and A.* i. 285. *Woodv.* t. 166. *S. and C.* ii. t. 88. — T. occidentalis *Gærtn.* t. 146. *DC.* l. c. 489. (*Rheede* i. t. 23. *Rumph.* ii. t. 23.) — East Indies, and West Indies. (Tamarind Tree.)

Leaves pinnate. Leaflets from 10 to 15 pair, opposite, sub-sessile, tapering a little, entire, obtuse, smooth on both sides, the inferior pair larger; petioles channelled, from 4 to 6 inches long; stipules small, deciduous. Racemes terminal and lateral. Bractes obovate, coloured, 1-flowered, deciduous. Calyx 4-leaved, cruciate, expanding, deciduous. Corolla somewhat papilionaceous, erect, unilateral, the length of the calyx. Vexillum, or middle petal oblong, its margins involute and curled; wings oval, margins curled; all 3 are beautifully variegated with red and yellow; keel 2 short subulate processes under the stamens; filaments 3, combined, inserted under the ovary, ascending. Anthers incumbent. There are the rudiments of 4 more filaments in the fissures and outsides of the 3 fertile ones. Ovary stalked, linear, with the style much incurved. Legume pendulous, nearly linear, generally curved, somewhat compressed, filled with firm, acid pulp, covered with a hard scabrous bark, which never separates into valves; under the bark run 3 fibres, 1 down the upper concave margin, and the other 2 at equal distances from the inferior, or convex edge. Seeds from 6 to 12, somewhat trapeziform, compressed, covered with a smooth, hard, brown shell, and inserted into the convex side of the pericarp. — The pulp of the fruit is cooling and laxative. The leaves are subacid and according to Prosper Alpinus were employed by the Arabians as an anthelmintic.

HYMENÆA.

Calyx with 2 bracts at the base; tube turbinate, coriaceous; limb 4–5-parted, deciduous, with 2 lobes sometimes united in 1. Petals 5, nearly equal, glandular. Stamens 10, distinct, inflated in the middle. Style filiform. Legume woody, oblong, many-seeded, containing fæcula. Embryo straight. — Trees. Leaves bifoliolate. Flowers corymbose.

553. H. Courbaril *Linn sp. pl.* 537. *Vahl. ecl.* ii. 30. *Lam. illustr.* t. 330. f. 1. *DC. prodr.* ii. 511. *Macfady. fl. jam.* i. 349. — Tropical parts of America; common in Jamaica.

A lofty spreading tree. Extremities of the branchlets terete, marked with long, ferruginous, reticulated scales. Leaves alternate, stalked, binate; leaflets oblong, unequal at the base, entire, obtusely acuminate, coriaceous, nerved, somewhat veiny, dark green above, paler with minute dark green dots beneath. Panicles terminal, stalked. Bracts somewhat membranous, deciduous. Sepals 4, deciduous, one of them

capable of being divided into 2; the 2 exterior thickish, coloured with purple, the others partially so, ovate, obtuse. Petals 5, white, ovate, thin, with pellucid dots. Stamens 10, distinct, filiform, subulate, nearly 1½ inch long, white; anthers oblong. Ovary stipitate, oval, compressed; style filiform, curved; stigma simple. Legume woody, ovate-oblong, 1-celled, containing fæcula, about 3-seeded; valves of a chocolate-colour, hard, convex and rough. — The meally substance in which the seeds are embedded is sweet and pleasant, but apt to purge when recently gathered; it loses this property as it becomes old. A decoction of the pulp, allowed to ferment, forms an intoxicating drink resembling beer. A fine transparent resin of a yellowish or red colour exudes between the principal roots. It is the *Gum Animi* of the shops. It burns readily, emitting a fragrant smell, and has been employed by way of fumigation in attacks of spasmodic asthma, and other embarrassments of respiration. In solution, it is given internally in doses of a tea-spoonful, as a substitute for Gum Guaiacum, for rheumatic and pseudo-siphilitic complaints, and employed externally as an embrocation. The resin, called *Jatahy*, *Jatchy*, or *Copal*, and in Minas Geraës *Jatobá*, is used, not only for various kinds of varnish, but also against tedious coughs, weakness of the lungs, spitting of blood, and incipient phthisis pulmonalis. The curadores have a method of mixing it with sugar and rum, so as to make a very agreeable emulsion, or syrup. *Martius.* A decoction of the inner bark is said to act as a vermifuge. *Macfadyen.*

ALOEXYLON.

Sepals 4, acute, deciduous, the lower falcate, incurved, twice as long as the others. Petals 5, unequal, longer than the calyx. Stamens 10, distinct. Ovary compressed, curved. Style filiform. Legume woody, smooth, falcate, 1-seeded. Seed oblong, curved, arillate. *Lour.*

554. A. Agallochum *Lour. coch.* i. 267. *DC. prodr.* ii. 518. — Highest mountains of Cochin-china, near the great river Laoum, which flows between that kingdom and Laos.

A large tree. Bark tough, fibrous, brown, smooth. Leaves lanceolate, 8 inches long, entire, flat, smooth, somewhat coriaceous, alternate, stalked. Flower terminal; peduncles many-flowered. *Lour.* — This tree produces one of the two sorts of Calambac, Eagle-wood, or Lignaloes, a fragrant substance, which Loureiro states consists of a concretion of the oily particles into a resin in the centre of the trunk; it is brought on by some disease, and the tree in time dies of it. The aromatic fragments are taken out of the trunk. Of all perfumes the most grateful to Oriental nations; "stimulant, corroborant, cephalic, cardiac." Its scent is used against vertigo and paralysis. Powder prevents vomiting and stops diarrhœa by its tonic, but astringent properties. *Lour.*

According to Dr. Royle *Eagle-wood* is a corruption of the Malayan *agila*, which in Sanscrit is *aggura* and in Hindu *aggur*, the name of the substance. Aloe-wood is supposed by Sprengel to have gained its name from *allowat* or *allieh* Arabic names of the plant, converted into αλοην. Aloe-wood has nothing to do with aloes.

Tribe III. Mimoseæ.

ACACIA.

Flowers polygamous, bisexual, and male. Calyx 4–5-toothed. Petals 4–5 either distinct, or united into a gamopetalous 4–5-cleft corolla. Stamens various in number (8–200). Legume continuous, dry, 2-valved. Seeds without pulp. — Shrubs or trees, unarmed, or armed with stipulary thorns or scattered prickles. Leaves pinnated or bipinnated; sometimes absent and represented by dilated petioles or phyllodia. Flowers yellow, white, or rarely red, in globular heads or longish spikes.

555. A. gummifera *Willd.* iv. 1056. *DC. prodr.* ii. 455. — Sassa gummifera *Gmel. syst.* — Africa about Mogador.

Smooth. Leaflets on 2 pinnæ, in about 6 pairs, linear, obtuse, with a sessile gland between the pinnæ; spines stipulary, straight. Spikes oblong, axillary. Legume somewhat moniliform, white with down. — It is by no means certain that the Sassa Gum, mentioned under Inga sassa, No 569, is not produced by this plant. Mr. Pereira refers Barbary Gum to it.

556. A. ferruginea *DC. prodr.* ii. 458. *W. and A.* i. 273. — Mimosa ferruginea *Roxb. fl. ind.* ii. 561. — Mountainous parts of India.

Thorns stipulary, recurved, strong, short and very sharp, sometimes absent. Leaves bipinnate, from 2 to 3 inches long; pinnæ from 3 to 6 pair, opposite, 1 or 1½ inch long; leaflets from 8 to 12 pair, linear-oblong, smooth, small; petioles now and then armed with a few small prickles on the under side. Spikes axillary and terminal, erect, cylindrical, stalked, pale yellow. Filaments many, monadelphous. Legumes membranous, rust-coloured, about 6 inches long and 1 broad. Seeds from 5 to 7. — Bark strongly astringent; added to jaggery water in India it forms an intoxicating liquor.

557. A. Catechu *Willd.* iv. 1079. *DC. prodr.* ii. 458. *S. and C.* ii. t. 76. *Macfady. fl. jam.* i. 314. *W. and A.* i. 272. — A polyacantha *Willd.* l. c. *DC.* 459. A. Wallichiana *DC.* 458. Mimosa Catechu *Linn. suppl.* 439. *Woodv.* t. 66. *Roxb. fl. ind.* ii. 563. *Cor. plants.* ii. t. 175. M. Catechuoides *Roxb. fl. ind.* ii. 562. — Various parts of the East Indies, now common in Jamaica.

A tree, 15–20 feet high; branches spreading, armed with strong black stipulary spines, downy towards their extremities. Leaves bipinnate; pinnæ 10–17 pairs; leaflets 30–50 pairs, linear, bluntish, unequal and auricled on the lower side at the base, ciliated; petiole angular, channelled above, downy, with 1 orbicular urceolate green gland below the lowest pair, and smaller ones between each of the 2, 3, or 4 terminal pairs of pinnæ. Spikes axillary, 1–2 together, cylindrical, on downy stalks. Flowers numerous, white, sessile. Calyx externally downy, 5-fid; teeth erect. Corolla rather longer than the calyx, 5-fid, glabrous. Stamens twice the length of the corolla, very numerous, distinct.

Ovary green, glabrous, shortly stipitate; style capillary, length of the stamens. Legumes flat, linear, thin, straight, glabrous, with about 6 seeds or fewer: seeds orbicular, flattened. — Yields Bengal Catechu, according to Mr. Pereira, of bad quality.

558. A. vera *Willd.* iv. 1085. *DC. prodr.* ii. 461. *S. and C.* ii. t. 77. — Mimosa nilotica *Linn. sp. pl.* 1506. (*Lob. ic.* ii. 95. f. 1.) — Africa from Senegal to Egypt.

Leaves bipinnate, smooth, as well as the branches; pinnæ 2 pair; leaflets 8–10 pairs, oblong-linear; a gland between the pinnæ. Spines in pairs. Flowers in globose heads; heads about 2 together, stalked, axillary. Legume moniliform. — From this the best gum Arabic is said to be obtained.

559. A. arabica *Willd.* iv. 1084. *DC. prodr.* ii. 461. *W. and A.* i. 277. — A. nilotica *Delil. ægypt.* p. 31. Mimosa arabica *Lam. enc. meth.* i. 19. *Roxb. corom. pl.* ii. t. 149. *fl. ind.* ii. 557. (*Pluk.* t. 221. f. i.) — Common all over India and Arabia.

A small tree, with taper glabrous thorny branches. Thorns stipulary, sometimes long, sometimes short or almost wanting: leaves bipinnate; pinnæ about 5 pairs, with a gland between the first and last pairs; leaflets 15–20 pairs, glabrous. Peduncles aggregated, axillary or forming a terminal raceme by the abortion of the leaves. Flowers in globose heads. Corolla 5 cleft. Stamens numerous, distinct. Legumes stalked, compressed, thickish, contracted on both sutures between the seeds. — In the opinion of Ehrenberg this is a mere variety of A. vera. Bark a powerful tonic.

560. A. Seyal *Delil. fl. ægypt* 142. t. 52. f. 2.
561. A. tortilis *Forsk. descr.* 176.
562. A. Ehrenbergii *Hayne N. and E. pl. med.* t. 413.
563. A. Senegal *Willd.* iv. 1077.

} are other species yielding a gum like Gum Arabic.

564. A. örfota — Mimosa örfota *Forsk. descr.* 177. — Dahhi in Arabia.

Leaves twin, bipinnate; pinnæ of 4–5 pairs; the last separated by a scale. Leaflets 6–9 pairs, oval-linear, oblique at the base, half a nail long. Spines 2 under each axil, in the room of stipules, very spreading, as long as the leaf. Legumes not jointed, compressed, attenuated at the base. — Leaves prevent fresh camel's milk from becoming acid for several days. Fumigation with the wood and resin employed with success by the Arabs in epilepsy. *Forsk.*

565. A. leucophlæa *Willd.* iv. 1083. *DC. prodr.* ii. 462. *W. and A.* i. 277. — Mimosa leucophlæa *Roxb. corom. pl.* ii. t. 150. *fl. ind.* ii. 558. A. alba *Willd.* l. c. *DC.* l. c. — Coast of Coromandel.

A tree? armed with stipulary thorns. Leaves bipinnate; pinnæ 7–12 pairs, with a gland below the first, and between some of the last pairs; leaflets 16–30 pairs, oblong-linear, pubescent or nearly glabrous. Panicles large, terminal or from the upper axils; branches and peduncles shortly tomentose. Flowers in globose, shortly pedunculate heads. Corolla 5-cleft. Stamens numerous, distinct. Legume narrow, linear,

long, curved, shortly tomentose (at least when young). *W. and A.* — Bark like that of A. ferruginea in its properties.

*** Besides these several New Holland Acacias yield a substance similar to Catechu, especially 566. A. mollisima, 566 *a*. A. decurrens, and 566 *b*. A. melanoxylun. The extract of this bark has been exported in considerable quantity under the name of extract of "*Mimosa bark*" from Van Diemen's Land.

I find in a recent work on that Island, that in consequence of the bark having been boiled in iron vessels in the process of manufacturing the extract, the latter although of great strength did not answer in England, as it was found to impart a colour to the leather, which it also rendered brittle. This was in the year 1828. Accordingly in the following years 1829, 30 and 31, bark alone was shipped at Hobart Town for England, in quantities as follows: viz.

1829.			1830.			1831.		
Cwt.	qr.	lb.	Cwt.	qr.	lb.	Cwt.	qr.	lb.
3,700	1	12	24,472	3	20	39,264	0	20

VACHELLIA.

Flowers polygamous, bisexual, and male. Calyx 5-toothed. Corolla tubular, gamopetalous, 5-(occasionally 6-) toothed, Stamens very numerous, distinct. Legume cylindrical, turgid. scarcely dehiscent, filled with pulp, and a double row of seeds. *W. and A.*

567. V. Farnesiana *W. and A.* i. 272. — Mimosa Farnesiana *Linn. sp.* 1506. *Roxb. fl. ind.* ii. 557. Acacia Farnesiana *Willd.* iv. 1083. *DC. prodr.* ii. 461. A. indica *Desv. journ. bot.* 1814. i. p. 69. *DC. prodr.* ii. 462. — East and West Indies and Africa.

A large shrubby or small tree, armed with stipulary straight thorns. Leaves bipinnated: pinnæ 4–8 pair, with a gland between the lower pair and often between the uppermost; leaflets 10–20 pair, linear, nearly glabrous. Petioles and peduncles more or less pubescent. Flowers capitate; heads globular, 2–3 together, each on an axillary peduncle. — Bark exudes a considerable quantity of gum. Flowers distilled, yield a delicious perfume. *W. and A.*

PROSOPIS.

Flowers polygamous. Calyx 5-toothed. Petals 5, distinct. Stamens 10; filaments scarcely united at the base. Legume continuous, pulpy inside, linear, compressed, often knobby where the seeds are, and almost separable between them. — Trees or shrubs, armed or unarmed. Leaves bipinnate; pinnæ 1–4 pairs; leaflets many pairs, oblong-linear. Spikes axillary, stalked, long; flowers rather distant, smooth, greenish or yellowish. Pods eatable. *DC.*

568. P. iuliflora *DC. prodr.* ii. 447. *Macfady. fl. jam.* i. 312. — Mimosa iuliflora *Swartz. prodr.* 85. M. piliflora *Swartz. fl. ind. occ.* 986. — Driest plains of Jamaica. (Cashew.)

A tree often 30 feet high, or a large bush. Branches very long, straggling, spiny, smooth; spines stipulary, in pairs, 4–5 lines long, strong, pointing upwards. Leaves bipinnate; 2 pairs of pinnæ; 18–20 pairs of leaflets, oblong, obtuse, veiny, smooth. A roundish, depressed, solitary gland at the base, between the petioles of the partial leaves. Spikes axillary, 2–3 from the same bud as the leaves, stalked, 2–3 inches long, many-flowered, sub-cylindrical, yellow, fragrant. Corolla villous inside. Pod 3–5 inches long, compressed, often twisted, smooth, many-seeded. Seeds separated by fleshy contractions, oblong, brown. — Leaves and twigs fatal to cattle which browse upon them, unless they are accustomed to them. Legumes although sweet also held to be noxious. *Swartz.* This is however denied by Dr. Macfadyen, who says that the young shoots leaves and pods are very nutritious, and are browsed upon with impunity by stock of every kind, during dry weather, and the pods are said to be as nutritious as corn. After rains he states that the pods do become pernicious, and are fatal to horses. This he ascribes to the seeds, at that time prepared to sprout, germinating in the stomach and giving off carbonic acid which induces inflammation of the stomach and bowels. Great quantities of "gum having all the properties of gum arabic" may be obtained by wounding the stem and large branches.

INGA.

Flowers polygamous, hermaphrodite and male. Calyx 5-toothed. Petals 5, united into a 5-cleft corolla. Stamens numerous, protruded, monadelphous at the base or sometimes for nearly their whole length. Legume broadly linear, compressed, 1-celled. Seeds covered usually with pulp, more rarely with a pellicle or farinaceous matter. — Shrubs or trees, usually unarmed. Flowers spiked or capitate, red or white. *W. and A.*

569. I. Sassa *Willd.* iv. 1027. *DC. prodr.* ii. 440. — Sassa *Bruce trav. abyss.* v. t. 4, 5. — Abyssinia.

Leaves 2-pinnate; 3 or 4 pairs of pinnæ; 12 pairs of leaflets which are oblong-obovate. Flowers in panicled umbels. Stamens monadelphous beyond the corolla; in some flowers short, in others very long. — According to Bruce this tree exudes gum in such quantity as to appear deformed by the size of the concretions. Guibourt says he met with a case of it called Gum Tragacanth and he reckons it among the false Tragacanths.

570. I. fagifolia — Mimosa fagifolia *Linn. sp.* 1498. Inga marginata *Willd.* iv. 1015. Mimosa Bourgoni *Aubl.* ii. t. 358. I. Bourgoni *DC. prodr.* ii. 434. — Guiana and some of the West India Islands, as Barbadoes.

A tree 30–40 feet high. Leaflets 2–3 pairs, ovate, shining, smooth; petiole somewhat winged, with distinct glands at the ends of the joints. Spikes axillary, about 4 together, short. Flowers white. Legume dry, 2-valved, containing many, green, compressed, quadrangular seeds enveloped in a white membrane. — Bark acrid and astringent.

571. I. Unguis Cati *Willd.* iv. 1006. *DC. prodr.* ii. 436. *Macfady.* i. 306. — Mimosa Unguis Cati *Linn. sp. pl.* 499. *Jacq. schönbr.* ii. t. 34. *Descourt. fl. ant.* i. t. 11. (Quamochitl *Hernandez* 94.)—West Indies and adjacent mainland, common.

A bush, about 10 feet high: branches terete, ash-coloured, sometimes unarmed; branchlets flexuose, glabrous; spines stipulary, short, straight. Leaves bipinnate: leaflets 1-paired sessile, very obtuse or subemarginate at the apex, nerved, glabrous: petiole subulate, channelled above. A minute gland at the extremity of the common, and another at that of the partial petioles. Racemes terminal, of 2–3 simple branches. Peduncle angular, minutely downy. Flowers greenish yellow, sessile, furnished at the insertion with a minute ovate bractlet. Calyx small, 5-toothed, with the teeth rather indistinct. Corolla more than twice the length of the calyx, 5-fid, with the teeth acute. Filaments capillary, yellow, matted, three times the length of the corolla. Legumes red, torulose, twisted in a spiral manner: seeds 5–6, black, shining, roundish, compressed, half-buried in a snow-white fleshy arillus-like pellicle. — A decoction of the bark very astringent. It has the reputation of acting as a diuretic, and has been employed externally as a lotion and injection in cases of relaxation of the parts. *Macfadyen.*

SAXIFRAGACEÆ.

Nat. syst. ed. 2. p. 162.

HEUCHERA.

Calyx permanent, 5-cleft, with an imbricated æstivation. Petals undivided, somewhat unequal. Stamens 5. Styles 2, very long, distinct, the length of the stamens, eventually diverging. Capsule crowned by the withered flower, at the lower part united to the calyx, 1-celled, dehiscing between the styles.

572. H. americana *Linn. sp. pl.* 328. *Elliott* i. 337. *Torrey fl.* i. 290. *DC. prodr.* iii. 51. — H. viscida *Pursh* i. 187. H. Cortusa *Michx. fl. bor. am.* i. 171. H. reniformis and H. glauca *Raf. med. fl.* i. 244.? — Shady rocky situations in North America. (Alum root.)

Root perennial. Leaves all radical, on very long downy stalks, roundish-cordate, hispidly pilose, about 7-lobed; the lobes with dilated mucronate teeth. Scape erect, naked, 2–3 feet long. Panicle thin, at length divaricating. Calyx obovate, striated, with very blunt segments. Petals minute, spathulate, purple, inserted into the margin of the calyx, between its segments. Filaments as long again as the petals, inserted opposite the segments of the calyx, persistent. Capsule ovate. Seeds minute, oblong, black, very hispid. — Root a powerful astringent.

CRASSULACEÆ.

Nat. syst. ed. 2. p. 163.

SEMPERVIVUM.

Calyx concave, permanent, with from 6 to 12, more or less deep, uniform, fleshy, rather acute, segments. Petals as many as the segments of the calyx, and somewhat larger, lanceolate, acute, channelled, equal, spreading, withering. A small lacerated scale, at the base of each carpel. Filaments as many, or twice as many, as the petals, opposite to them, but not so long, when more numerous, alternate, awl-shaped, spreading; carpels as many as the stamens, oblong, pointed, compressed, each terminating in a spreading style, with a blunt stigma; when ripe bursting along their inner margins.

573. S. tectorum *Linn. sp. pl.* 664. *Eng. Bot.* t. 1320. *Fl. Lond.* t. 29. *DC. prodr.* iii. 413. — Common on roofs and walls. (Houseleek; Hauslaub *Germ.*)

Root fibrous, crowned with several rosaceous tufts of numerous, oblong, acute, keeled, fringed, extremely succulent leaves. Stem from the centre of one of these tufts, a foot high, erect, round, downy, clothed with several, more narrow, sessile, alternate leaves, and terminating in a sort of many-flowered cyme, with spiked branches. Flowers large, pale rose-coloured, without scent. Segments of the calyx 12 or more, with a similar number of petals, stamens and pistils. — The leaves are cooling, when applied externally, and frequently renewed. They possess moreover an astringent property, which is rather salutary in many cases. The Dispensatory describes a beautiful white highly volatile coagulum, formed of the filtrated juice of these leaves, with an equal quantity of rectified spirit of wine. *Smith.*

SEDUM.

Calyx 5-parted. Petals 5. Stamens twice as many. Hypogynous scales entire or nearly so. Carpels 5. — Succulent herbaceous plants or undershrubs.

574. S. Telephium *Linn. sp. pl.* 616. *E. Bot.* t. 1319. *Smith Eng. fl.* ii. 316. *DC. prodr.* iii. 402. — Various parts of Europe in fields, hedges, and bushy places. (Orpine.)

Root of several oblong, tapering, white knobs. Herb smooth. Stems 2 feet high, erect, simple, leafy, round, spotted with red. Leaves scattered, sessile, ovate, spreading, fleshy, more or less bluntly toothed or serrated, with a stout midrib. Flowers crimson, rarely white, in dense, corymbose, terminal or partly axillary, tufts, interspersed with fleshy toothed bracts. *Smith.* Stamens not longer than the corolla.— Refrigerant, and slightly astringent. Leaves boiled in milk are commended in diarrhœa.

575. S. acre *Linn. sp. pl.* 619. *E. Bot.* t. 839. *Woodv.* t. 231. *Eng. Bot.* ii. 317. *DC. prodr.* iii. 407. — Common on walls, dry roofs and old ruins all over Europe.

Root fibrous, subdivided. Herb smooth, succulent, and tender, grass-green, very hot and pungent to the taste, composing lax, wide-spreading tufts. Stems entangled, branched; the branches leafy, erect, round, 2 or 3 inches high. Leaves imbricated on the barren branches; scattered on the flowering ones; obtuse, convex at the back, flattened above, spurred at the base. Flowers of a golden yellow, more or less numerous, in 3-branched leafy, or bracteated, cymes. Capsules membranous. *Smith.* Petals lanceolate, acuminate. — Leaves acrid. Has been recommended in cancerous cases, and also in epilepsy.

*** The Crassula pinnata *Loureiro*, with an intensely bitter taste, and used against dropsy, &c., which Dierbach admits into this order, is evidently, as De Candolle has remarked, not a Crassulaceous plant at all, but belongs to some entirely different natural order.

AMYRIDACEÆ.

Nat. syst. ed. 2. *p.*165.

AMYRIS.

Flowers hermaphrodite. Calyx 4-toothed, permanent. Petals 4, hypogynous, cuneate, unguiculate, imbricated in æstivation. Stamens 8, shorter than the petals. Ovary 1-celled, seated on a thick disk-like receptacle; stigma sessile. Drupe with a thin-sided 1-seeded stone. — Trees or shrubs containing a resinous juice. Leaves compound, with pellucid dots. Flowers panicled, white. Drupes abounding in aromatic oil.

576. A. balsamifera *Linn. sp. pl.* 496. *Willd.* ii. 338. *Swartz. obs.* 149. *Macfady. jam.* i. 232. — A. toxifera *Willd.* ii. 336. *DC. prodr.* ii. 81. (*Pluk.* t. 201. f. 3. *Catesby car.* i. t. 40.) — West Indies.

A small tree or bush. Branches rough with small asperities. Leaves unequally pinnated; leaflets in 2 pairs, slightly stalked, ovate, rounded at the base, acuminate, nearly entire, with pellucid dots. Panicles terminal, sessile. Flowers numerous, white, slightly fragrant, in threes. Divisions of calyx ciliated. Petals reflexed. Ovary slightly downy; stigma sub-sessile, capitate.—Branches when bruised or broken exhale a strong smell. Said to be poisonous according to De Candolle.

577. A.? hexandra *Hamilt. prodr. ind. occ.* p. 34. — Woods in damp cool alpine places on the central mountain of Nevis.

A good sized tree. Leaves unequally pinnate, in 3 pairs; leaflets entire, ovate, shortly, obtusely, and rather obliquely acuminate, decurrent at the base into a short petiole; smooth on each side, netted beneath. Flowers panicled, small, greenish, always hexandrous. Panicles axillary and terminal. Calyx cyathiform, entire. Petals 3, greenish, entire. Stamens 6, very short. Ovary oblong, smooth (inferior according to Hamilton, but this I suppose to be an error of the press for superior); style short; stigma obtuse. Fruit (the stone of the drupe?) membranous, elliptical, acuminate at each end, 1-valved. — Mr. William Hamilton from whom the above imperfect account is taken says that this plant produces the fragrant fennel-scented substance called *Gum Elemi*, on Nevis. He adds that it is a large tree yielding a fragrant resinous juice which flows in abundance when the smooth ash-coloured bark is wounded.

*** The genera Copaifera and Myrospermum, included in this order here and in my Introduction to the Natural System, hold a sort of middle place between Amyridaceæ and Fabaceæ (Leguminosæ), and are usually referred to the latter. I think however that the balance of reasoning upon the subject upon the whole turns this way, and they accordingly remain where I have already placed them.

COPAIFERA.

Calyx 4-parted; segments diverging, the lowest the narrowest. Corolla 0. Stamens 10, declinate. Ovary roundish, compressed, with 2 ovules. Fruit pedicellate, oblique, obovate, rounded, compressed, between woody and leathery, 2-valved, 1-seeded. Seed enclosed in a 1-sided aril. — Trees or shrubs inhabiting tropical America; their trunk yielding balsam by incision. Leaves alternate, pinnated equally or unequally; leaflets opposite or alternate, either dotted *or not.* Stipules generally 0. Bracts extremely fugacious. Flowers arranged in compound axillary and terminal spikes.

578. C. Jacquini *Desf. mem. mus.* vii. 376. *Hayne in Linnæa* i. 426. — C. officinalis *Jacq. amer.* t. 86. *S. and C.* iii. t. 158. — West Indies.

Leaves generally equally pinnated; leaflets in 2–5 pairs, incurved, ovate, unequal-sided, obtusely acuminate with pellucid dots. *Hayne.* — From this is obtained the Copaiva balsam of the West Indies.

579. C. multijuga *Hayne* l. c. — Para.

Leaves equally pinnated; leaflets 6–10 pairs, somewhat incurved, unequal-sided, with a long tapering point, and pellucid dots; the lower ovate oblong, the upper lanceolate. *Hayne.* — According to Hayne this yields the Copaiva exported from Para.

580. C. Langsdorfii *Desf. in mem. mus.* vii. 376. *Hayne* l. c. *DC. prodr.* ii. 509. — Province of S. Paul, in Brazil.

Leaflets in 3–5 pairs, equal-sided, obtuse, with pellucid dots; the lower ovate, the upper elliptical. Petioles and peduncles slightly downy. — Copaiva balsam of Brazil is furnished by this and the next species according to Spix and Martius.

581. C. coriacea *Martius in Isis* 1824. p. 589. *Hayne* l. c. — Province of S. Paul, in Brazil.

Leaflets in 2–3 pairs, elliptical, equal-sided, emarginate, not dotted. Petioles and peduncles nearly smooth. — The balsam of Copaiva an acrid, bitter, nauseous liquid resin with stimulant, diuretic, and cathartic properties, is apparently furnished by all the species of this genus: the above are given upon the authority of Hayne, who discontinues the name of Copaifera officinalis which appears to have been applied indiscriminately to many different species.

MYROSPERMUM.

Calyx campanulate, 5-toothed. Petals 5, the upper largest. Stamens 10, distinct. Ovary stipitate, oblong, membranous, with 2–6 ovules. Legume with a winged stalk terminating in an oblique, indehiscent, 1-celled, 1–2-seeded samara. — Trees with dotted leaves.

582. M. peruiferum *DC. prodr.* ii. 95. *S. and C.* ii. t. 102. — Myroxylum peruiferum *Linn. f. suppl.* 233. *Lamb. illustr. cinch.* 92. t. 1. M. pedicellatum *Lam. dict.* iv. 191. *illustr.* t. 341. f. 1. — Forests of Peru; low, warm, sunny situations near the river Maranon. (Quinquino.)

A tree, with a thick, straight, smooth trunk. Bark grey, coarse, compact, heavy, granulated, pale straw-colour inside, filled with resin which, according to its quantity, changes the colour to citron, yellow, red, or dark chesnut; smell and taste grateful, balsamic and aromatic. Leaves pinnated; leaflets alternate, of 2, 3, 4 or even 5 pairs, ovate-lanceolate, acute, coriaceous, at the apex somewhat emarginate, shining above, hairy on the underside, marked with transparent spots, the terminal one the same size as the others. Racemes axillary, longer than the leaves. Calyx campanulate, nearly equally five-toothed, with the odd tooth remote from the others. Petals 5, white; the upper reflexed, broad, roundish, emarginate; the other 4 distinct, linear-lanceolate reflexed, spreading. Stamens 10, distinct, spreading, shorter than the petals; anthers mucronate. Samaras pendulous, straw-coloured, pedicellate, linear-oblong, about 2 inches in length, compressed, membranous, except at the apex which is obliquely rounded, clavate, 1-celled, 1-seeded. Seed reniform, lying in yellow liquid balsam, which hardens into resin. — The stem yields the fragrant bitter aromatic balsam, called Balsam of Peru, having stimulant tonic expectorant properties, and employed in palsy, chronic asthma, gleet, leucorrhœa &c. Applied externally in the form of plaster it mitigates headach and toothach: the balsam closes recent wounds. *Ruiz.*

583. M. toluiferum *Ach. Rich. ann. sc.* 1824. ii. p. 172. *DC. prodr.* ii. 95. — Toluifera Balsamum *Mill. dict.* No. 1. *Woodv.* iii. 526. t. 193. *bad.* Myroxylon Toluifera *HBK.* vi. 375.—Mountains of Turbaco near Carthagena; and extremely common in the high savannahs of Tolu, near Corozol and Villa Tacasuan.

Very like the last but different as follows. Leaflets thin, membranous, obovate, taper pointed; the terminal one larger than the others. — The warm, sweet, fragrant, solid stimulant balsam called Balsam of Tolu is obtained from this tree. It is used in coughs, chronic pulmonary complaints and on account of its flavour. In the last edition of the London Pharmacopœia it is said to be the concrete Balsam of the last species; and this agrees with the statement of Ruiz. Guibourt however and most other writers consider the Balsam of Tolu the produce of this species.

ANACARDIACEÆ.

Nat. syst. ed. 2. *p.*166.

MANGIFERA.

Flowers polygamous. Calyx 5-partite, deciduous. Petals 4–5, inserted under the disk, furnished on the inside with a lobed glandular scale or crest: æstivation imbricative. Stamens arising from the disk: 1 (or occasionally 2) fertile, ascending, opposite to one of the lower sepals, with a subulate fleshy filament about as long as the style: the others sterile (usually 3 or 4, sometimes more), slender, minute, tipped with a small gland. Disk thick fleshy 4–5-lobed. Ovary with its base immersed in the disk, oblique, consisting of a solitary carpel, 1-celled, 1-ovuled: ovule attached a little above the base to the upper side of the ovary. Style 1, from the upper edge of the ovary, curved downwards. Stigma simple. Drupe somewhat compressed; sarcocarp fleshy; stone compressed, woody, 1-celled, 2-valved, covered on the outside with fibrous filaments. Seed solitary. — Trees. Leaves alternate, coriaceous, entire and quite entire. Panicles terminal, much branched. Flowers small. *W. and A.* chiefly.

584. M. indica *Linn. sp. pl.* 290. *Roxb. fl. ind.* i. 641. *W. and A.* i. 170. — (*Rheede* iv. t. 1, 2. *Rumph.* i. t. 25.) — Continent and islands of the East Indies, whence it has been carried into other tropical countries.

Tree of great size, with an erect trunk, covered with dark-coloured, cracked bark. Leaves alternate, stalked, lanceolate, entire, often a little waved at the margin, firm, smooth, shining, generally from 6 to 12 inches long, and from 2 to 3 broad; petioles round, smooth, 1 to 2 inches long. Panicles terminal, erect or ascending, a little downy. Pedicels short, thick, rigid. Bracts oval, concave, a little downy. Flowers small, yellow, with some stripes of red near the base of the petals; polygamous. Sepals 5, oblong, concave. Petals 5, lanceolate, spreading, twice the length of the calyx. Disk very large, yellow, fleshy, of 5 concave lobes. Filament single, subulate, ascending, half the length of the petals, inserted between the lower lobe of the disk and the ovary. Anther oval, purple. Sterile stamens 2, 3, 4, or more, very minute. Ovary obliquely oval, 1-celled, with a single ovule attached to the side of the cell, opposite to the fertile stamen, and under the style. Style from the side of the ovary, the length of the stamen, subulate, incurved. Drupe oblong or kidney-formed, a little compressed, fleshy, smooth, when ripe, yellow; in general about as large as a goose's egg. Stone of the same form as the drupe, but more compressed, covered with a ragged fibrous coating, woody, 1-celled, 2-valved. — The drupe is to the inhabitants of India what the peach is to Europeans; the most

grateful of all fruits. Its flesh is filled with a rich luscious juice; but the inferior kinds have also so much turpentine flavour as to be uneatable. From wounds made in the bark, there issues a soft reddish, brown gum resin, which age hardens, and renders exceedingly like *bdellium*. Burnt in the flame of a candle, it emits a smell like that of Cashew nuts when roasting. It softens in the mouth, and adheres to the teeth. Its taste is slightly bitter with some degree of pungency. It dissolves almost entirely in spirits, and in a great measure in water; both solutions are milky with a small tinge of brown. *Roxb.*

HOLIGARNA.

Flowers polygamous-diœcious. Calyx 5-toothed. Petals 5, from a broad base, contiguous, oblong, spreading. Stamens 5, shorter than the corolla. Ovary (in the hermaphrodite flowers) connate with the tube of the calyx, 1-celled, 1-ovuled; ovule suspended on one side from near the apex of the cell. Styles 1–3 from the top of the ovary. Fruit inferior, oval; pericarp thick, somewhat fleshy, containing cells full of thick acrid juice. Seed with a transverse embryo. — Trees. Leaves stalked, alternate, oblong, acute or acuminate, entire, glabrous, or when young with a short rusty-coloured pubescence. *W. and A.* chiefly.

585. H. longifolia *Roxb. corom.* iii. t. 282. *fl. ind.* ii. 80. *DC. prodr.* ii. 63. *W. and A.* i. 169. — (*Rheede* iv. t. 9.) — Travancore and Malabar.

Leaves cuneate, oblong or acute; petioles usually with a subulate soft, incurved, thorn-like, deciduous process on each side about the middle. Panicles terminal and axillary; styles recurved; stigmas crescent-shaped. *W. and A.* — Similar in its properties to Stagmaria verniciflua, No. 594.

ANACARDIUM.

Flowers polygamous. Calyx deeply 5-cleft, deciduous; segments erect: æstivation imbricative. Petals 5, linear, acuminate, recurved. Receptacle filling up nearly the whole tube of the calyx, and combining the bases of the stamens and petals. Stamens about 9 or 10, 1–4 of them in the male flowers fertile, and twice as long as the others, which are usually sterile: filaments connate at the base and with the base of the petals. Ovary free, sessile, oblique, 1-celled. Style solitary, somewhat on one side, filiform, curved. Fruit compressed, somewhat coriaceous, on the top of the enlarged elevated stalk-like pyriform receptacle: pericarp containing in its substance cells full of an acrid juice. Seed erect. Cotyledons semi-lunate, fleshy, plano-convex. Radicle curved.

586. A. occidentale *Linn. sp.* 548. *Jacq. amer.* i. t. 181. f. 35.

DC. prodr. ii. 62. *Roxb. fl. ind.* ii. 312. *W. and A.* i. 168. — (*Rheede* iii. t. 54. *Rumph.* i. t. 69.) Cassuvium pomiferum *Lam.* Acajuba occidentalis *Gœrtn.* t. 40. f. 2.) — A common tree in the East and West Indies, in sandy soil.

Trunk short and very crooked. Young shoots smooth. Leaves alternate, rather short-stalked, obovate, with a rounded or emarginate apex; smooth on both sides and of a hard texture, from 4 to 8 inches long. Panicles terminal, bearing small barren and fertile hermaphrodite flowers intermixed, Bracts gibbous, lanceolate. Calyx inferior, 5-cleft nearly to the base; divisions oblong, acute, and nearly smooth. Petals 5, linear-lanceolate, revolute, of a pale yellow colour, with longitudinal pink stripes. Filaments generally 9, united at the base into a ring round the ovary, 1 of them, particularly in the sterile flowers, more than double the length of the others. Anthers apparently all fertile, that of the major filament large. Ovary in the males minute, with a very short style, in the females obliquely obcordate, 1-celled, with 1 reniform seed attached to the side of its cell. Style long, becoming convolute. Fruit a kidney-shaped ash-brown nut standing upon a pear-shaped crimson fleshy receptacle. — In the coats of the nut is an abundance of a caustic thick oil, which blisters when applied to the skin and has been used as a caustic for warts, corns, obstinate ulcers, ringworms, &c. The fleshy peduncle is an agreeable fruit. The vapour of the oil when roasting will often produce violent swelling and inflammation. A gum resembling gum Arabic and called Cashew gum is exuded from the bark. *Pereira.* This gum, which in its properties almost entirely agrees with gum arabic, but is rather more astringent, is used in Brazil in the same manner as that substance. The bookbinders in the principal towns sometimes wash books with a solution of it, which is said to keep off the moths and ants. The fresh acid juice of the flower-stalks is used in Lemonade; wine and vinegar too are made of it by fermentation. The sympathetic effect which the nut, borne about the person, has upon chronical inflammations in the eyes, especially such as are of a scrophulous nature, is remarkable. *Martius.*

SEMECARPUS.

Flowers polygamous-diœcious. Calyx 5-cleft. Petals 5, inserted under the margin of the disk, sessile, very spreading: æstivation imbricative. Stamens 5, inserted under the margin of the disk, equal, distinct. Disk cup-shaped. Ovary free, sessile, 1-celled. Styles 3. Stigmas clavate, retuse. Fruit somewhat cordate, sessile on the enlarged receptacle; pericarp hard and thick, containing between the inner and outer lamina cells full of a corrosive resinous juice. Seed suspended. Cotyledons thick, fleshy, plano-convex. Radicle superior, minute, concealed within the apex of the cotyledons.

587. S. Anacardium *Linn. f. suppl.* 182. *Roxb. corom.* i. t. 12. *fl. ind.* ii. 83. *DC. prodr.* ii. 62. *W. and A.* i. 168. — Anacardium latifolium *Lam. enc.* i. 139. *illustr.* t. 208. A. officinarum *Gœrtn.* — Mountainous parts of the East Indies. (Marking nut.)

Trunk straight, covered with grey scabrous bark; the bark of the younger parts smooth, light ash-coloured; its inner substance contains in crevices, a quantity of white, soft, almost insipid gum. Branchlets numerous, spreading. Leaves about the extremities of the branchlets alternate, stalked, somewhat wedge-shaped or oblong-obovate, rounded at the apex, entire, firm above, pretty smooth, yet harsh, and whitish underneath; from 9 to 18 inches long, and from 4 to 8 broad. Petioles 1½ or 2 inches long, half round. Panicles terminal, very large, composed of many simple spikes; that of the male tree much more slender, but as large, or larger, and branched. Bracts many, small, deciduous. Flowers numerous, small, of a dull greenish yellow colour. Receptacle erect, fleshy, pear-shaped, smooth, when ripe, yellow, about the size of the nut. Fruit a single nut, resting upon the receptacle, cordate, flattened on both sides, smooth, shining, black; the pericarp composed of two laminæ; the inner one hard, the outer one less so, and leathery; between them are cells which contain a black corrosive resinous juice. The juice is of a pale milk colour till perfectly ripe, when it becomes black. Male flowers on a separate tree, smaller than the hermaphrodite. Filaments 5, the length of the petals. Anthers much larger than in the hermaphrodite. Pistil 0, or small and abortive, and in form of a semi-globular, hairy, glandular body. — Wood contains much acrid juice which renders it dangerous to those who work upon it. Receptacles eaten like apples when roasted. The pure black acrid juice employed externally by the natives of India to remove rheumatic pains, aches and sprains: a little being rubbed over the parts affected; and is an efficacious remedy except in such constitutions as are subject to inflammations and swellings. Universally used to mark linen. Employed by the Telinga physicians mixed with garlic and other substances in almost every sort of venereal complaint. Bark mildly astringent.

RHUS.

Flowers polygamous or hermaphrodite. Calyx small, 5-partite, persistent. Petals 5, ovate, spreading, inserted under the margin of the disk: æstivation imbricative. Stamens 5, inserted into the disk, equal, free. Disk orbicular. Ovary sessile, ovate or globose, 1-celled: ovule solitary, suspended from a longish curved funiculus rising from the base of the cell. Styles 3 from the top of the ovary, distinct or combined. Stigmas distinct, obtuse or capitate. Fruit almost a dry drupe: nut bony 1-celled. Seed solitary, suspended from a funiculus that rises from the base to the apex of the cell. Embryo inverted: cotyledons foliaceous: radicle opposite to the hilum, bent downwards along the margin of the cotyledons. — Shrubs or trees. Leaves alternate, simple or compound. Peduncles axillary or terminal. *W. and A.*

588. R. venenata *DC. prodr.* ii. 68. — R. vernix *Linn. sp. pl.* 380. *Bigelow med. bot.* i. t. 10. — Common in North America in swamps and meadows; vulgar name "Poison tree, Poison wood, Poison ash, Poison sumach."

Trunk from 10 to 30 feet high and 1 to 5 inches in diameter, branching at top, and covered with a pale greyish bark. The ends of the

young shoots and petioles usually of a fine red. Leaves pinnate; leaflets oblong or oval, entire, or somewhat slightly sinuated, acuminate, smooth, paler underneath, nearly sessile, except the terminal one. Flowers diœcious and polygamous, very small, green, in loose axillary panicles. The panicles of barren flowers downy, largest and most branched. Sepals 5, ovate. Petals 5, oblong. Stamens longer than the petals, and projecting through their interstices. The rudiment of a 3-cleft style in the centre. In the fertile flowers, the panicles of which are much smaller, the sepals and petals resemble the last, while the centre is occupied by an oval ovary, terminated by 3 circular stigmas. Fruit a bunch of dry berries or rather drupes of a greenish white, sometimes marked with slight purple veins, and becoming wrinkled when old; roundish, a little broadest at the upper end, and compressed, containing one white, hard, furrowed seed. — The juice or even air impregnated with the volatile principle of this plant is to many persons a serious poison producing severe and dangerous erysipelatous swellings. Kalm mentions a person who by the simple exhalation was swollen to such a degree that "he was as stiff as a log of wood and could only be turned about in sheets." Some constitutions are however but slightly or not at all affected by it.

589. R. Toxicodendron *Linn. sp. pl.* 381. *DC. prodr.* ii. 69. *S. and C.* iii. t. 167. *Bot. Mag.* t. 1806. — R. radicans *Linn. sp. pl.* 381. *Bigelow med. bot.* iii. t. 42. *DC. prodr.* ii. 69. — Common in woods in the United States. (Poison ivy.)

A creeping shrub with long cord-like shoots, emitting strong lateral fibres. Leaves ternate, on long semicylindrical petioles. Leaflets ovate or rhomboidal, acute, smooth and shining on both sides, the veins sometimes a little hairy beneath. The margin is sometimes entire and sometimes variously toothed and lobed, in the same plant. Flowers small, greenish white. They grow in panicles or compound racemes on the sides of the new shoots, and are chiefly axillary. The barren flowers have a calyx of 5 erect, acute segments, and a corolla of 5 oblong recurved petals. Stamens erect with oblong anthers. In the centre is a rudiment of a style. The fertile flowers, situated on a different plant, are about half the size of the preceding. The calyx and corolla are similar, but more erect. They have 5 small, abortive stamens, and a roundish ovary surmounted with a short, erect style, ending in 3 stigmas. The berries are roundish and of a pale green colour, approaching to white. — Yields abundantly a yellowish narcotic acrid milky juice, which becomes black when exposed to the air, and forms an indelible ink when applied to linen. This juice, and even the exhalations from the plant are extremely poisonous, to many persons, though not to all. They bring on itching, redness and tumefaction of the affected parts, particularly of the face, succeeded by blisters, suppuration, aggravated swelling, heat, pain and fever. Symptoms though often highly distressing are rarely fatal. It is employed in powder, infusion and extract internally in certain diseases. Dr. Horsfield administered it with success in the dose of a teacup of the infusion to consumptive and anasarcous patients; it has been employed with supposed benefit in consumption, and is well spoken of in cases of herpetic eruption, palsy, mania, and paralysis.

De Candolle follows Nuttall in considering Rhus radicans and Toxicodendron distinct species; but I am persuaded that the supposed

differences relied upon by those authors are of no specific importance. It is said that R. radicans has the leaflets quite entire and smooth, while R. Toxicodendron has them angular, gashed and downy.

The general character of this genus is to be poisonous. The following species in particular have been named: —

590. R. glabra *Linn. sp. pl.* 380.

591. R. pumila *Michx. fl.* i. 182. the most venomous of all.

592. R. perniciosa *HBK.* vii. 10.

HEUDELOTIA.

Flowers hermaphrodite. Calyx tubular, 4-toothed, coloured. Petals 4, linear, obtuse, longer than the calyx. Stamens 8, the 4 alternating with the petals longest. Ovary minute, in the bottom of the calyx; stigma obscurely 2-lobed, subsessile. Drupe dry, pisiform, acute, 1-celled, with 1 suspended seed.

593. H. africana *Guillem. and Perrott. fl. senegamb.* i. 150. t. 39. — Niouttout *Adans.* — Sandy wastes in the interior of Senegal.

A bush 8–10 feet high, armed with axillary spines. Leaves downy, ternate, stalked; leaflets oval, rather rhomboidal, coarsely and unequally cut, rugose, tapering to the base. Flowers very small, reddish, appearing upon the naked branches before the leaves. — According to Guibourt this should be the plant that yields the African Bdellium, "only the tears of Bdellium collected on the bush by M. Perrottet are hardly bigger than peas; therefore the Bdellium of commerce is either produced by a different species, or the Niouttout must become a larger tree than M. Perrottet saw." (ii. 498.) It must be remarked that nothing is said about Bdellium in the Flora Senegambiæ of Perrottet and Guillemin.

STAGMARIA.

Calyx inferior, tubular, deciduous, irregularly ruptured at the edge. Petals 5, inserted on the stipe of the ovary. Stamens 5, alternate with and as long as the petals. Carpels 3, 1-seeded; part often abortive. Styles terminal, shorter than stamens; stigmas blunt. Berry reniform, furrowed on 1 side, 1-seeded, with a varicose bark. Embryo erect; cotyledons consolidated; radicle incurved.

594. S. verniciflua *Jack in Comp. to BM.* i. 266. — Arbor vernicis *Rumph.* ii. t. 86. Kayo Rangas *Malay.* — Eastern islands in the Indian Archipelago.

Tree of considerable size; branches and branchlets smooth, round, and marked with small dots. Leaves alternate or scattered, petiolate, elliptic-lanceolate, about 8 inches long, subattenuate to the base, rather acute, sometimes obtuse, or even retuse at the point, very entire, very smooth, firm and shining, with lucid nerves. Petioles about an inch long, flattened above; stipules none. Panicles axillary, on rather long peduncles. Flowers numerous, pedicellate, white, having rather a

narcotic smell. Calyx tubular, deciduous, bursting into 2 or 3 irregular segments. Corolla much longer than the calyx, spreading, somewhat reflexed, 5-petaled; petals oblong, rather obtuse, adnate at the base to the column which supports the ovary. Stamens 5, inserted on the same column above the petals, alternating with them, and nearly of the same length; filaments thread-shaped; anthers short, oblong, 2-celled. Carpels on a pedicel or column, sometimes 3, but more frequently there is only 1, whose position on the pedicel is rendered oblique by the abortion of the other 2; each carpel contains a single ovule attached to the inner angle. Styles terminal, shorter than the stamens. Stigmas obtuse. Berry as large as a fresh walnut, reniform or somewhat spheroidal, but rather irregular in shape, generally furrowed on one side; the rind is rough and brownish, of a spongy texture, often exhibiting on the surface the appearance of varicose veins, and when cut, exuding an acrid juice; it contains a single seed, similar in form to the fruit, and equally abounding with a corrosive gum or resin. Embryo exalbuminous, erect. Cotyledons united, having a fissure on one side; radicle at the base of the fruit, short, incurved upon the cotyledons at the lower part of the fissure. *Jack.* — Resin copious, extremely noxious and acrid, causing excoriation and blisters when applied to the skin; the exhalations from the tree are so deleterious as to render it unsafe to remain beneath its shade. It yields one of the celebrated hard black lackers or varnishes of China. See *Comp. B. M.* l. c.

SCHINUS.

Flowers diœcious. Calyx 5-parted. Petals 5. ♂. Stamens 10. ♀. Filaments sterile. Ovary 1, sessile; style 0; stigmas 3–4, capitate. Drupe small, with a thin epicarp, a moderately fleshy sarcocarp, and a 1-seeded bony stone, having 6 empty cavities in its circumference. Seed suspended by a cord originating in the side of the lining, compressed, without albumen; cotyledons flat; radicle inferior. — American balsamiferous shrubs or trees with a peppery flavour. Flowers in axillary racemes or panicles. Leaves unequally pinnated.

595. S. Molle *Lin. sp. pl.* 1467. *Lam. illustr.* t. 822. *DC. prodr.* i. 74. *Bot. Mag.* t. 3339. — Mexico and Peru.

A small graceful tree. Leaves evergreen, pinnated. Leaflets linear-oblong in 4–9 pairs, coarsely serrated, the terminal leaflet generally the longest and quite sessile. Flowers small, in axillary and terminal panicles. Calyx bluntly 5-cleft. Petals 5 obovate-lanceolate, spreading, pale yellow-green. Ovary globose. Styles 3, each tipped with a large capitate stigma. — Bark and leaves filled with a resinous matter which exudes from the trunk when wounded and concretes into a substance resembling Mastich. A white odoriferous substance, resembling Gum Elemi is also procured from the leaves, and, dissolved in milk, is used in diseases of the eye. Of the bark boiled in water, lotions are made for healing tumours and reducing inflammations. *Hooker.*

S. Aroeira *Linn. sp. pl.* 1467. is in the opinion of Sir William Hooker, a variety with the leaflets entire. It is said by Aug. de St. Hilaire, to cause swellings in those who sleep beneath its shade. The

fresh juicy bark is used in Brazil for rubbing newly-made ropes with, which it covers with a very durable bright dark-brown coating. It is said by Prince Maximilian of Wied Neuwied, to be employed by the Indians in diseases of the eye.

PISTACIA.

Flowers dicœcious, apetalous. ♂. Raceme amentaceous with 1-flowered bracts. Calyx 5-cleft. Stamens 5; anthers subsessile 4-cornered. ♀. Raceme more lax. Calyx 3–4-cleft. Ovary 1–3-celled. Stigmas 3, rather thick. Drupe dry, ovate, with a somewhat bony nut, usually 1-celled and 1-seeded; sometimes bearing 2 abortive cells at the side. Seeds solitary, erect, without albumen. Cotyledons thick, fleshy, oily, with a superior lateral radicle. — Trees with pinnated leaves.

596. P. vera *Linn. sp. pl.* 1454. *Lam. illustr.* t. 811. f. 1, 2. *Ach. Rich. bot. méd.* 596. *DC. prodr.* ii. 64. — Syria; now naturalised all over the South of Europe. (Pistacia Nut.)

A small scrubby tree. Leaves alternate, unequally pinnate, coriaceous, smooth; leaflets in 3–5 pairs, oval, obtuse. Flowers borne on wood 2 years old, and proceeding from a scaly bud, the parts of which are woolly at the edge. Males arranged in a branched raceme. Calyx-lobes erect, membranous, linear-lanceolate, or subulate. Stamens 5, larger than the calyx. Female flowers in little simple or 3-flowered spikes. Calyx much as in the male. Ovary ovate, slightly stipitate, 1-celled, containing a single ovule borne by a long umbilical cord springing from the bottom of the cell. Stigmas 3, nearly sessile, thick, blunt, reflexed. Drupe oval, elongated, dry, opening into 2 valves when quite ripe and about the size of an olive; kernel large, fleshy, of a bright pale green colour. — Fruit commonly employed in the South of Europe at dessert, for confectionary. It contains a considerable quantity of fixed oil, and makes an excellent emulsion for irritation of the urethra and for other purposes.

597. P. Terebinthus *Linn. sp.* 1455. *DC. prodr.* ii. 64. *Woodv.* t. 153. *S. and C.* iii. t. 129. — Syria and the Greek Archipelago.

A rather smaller plant than the last, but very much like it. Leaflets 7–9, oval, lanceolate, acute, smooth, entire, deep-green and shining above, whitish beneath. The scales from amongst which the male flowers escape are closely covered with brown hairs. Fruit purple, almost round, much smaller than in the preceding. — Cyprus turpentine is obtained from the trunk by incision. When pure this is very thick, yellowish, sweet-scented, resembling Lemon or Fennel in some degree, with an agreeable and by no means acrid taste. Follicular horn-like galls are produced on this species in the South of Europe, which have been used according to Clusius in the manufacture of a "sanative and glutinous" balsam. *Linnæa*, x. 58. and 442.

598. P. Lentiscus *Linn sp. pl.* 1455. *Duham. ed. nov.* iv. t. 18. *DC. prodr.* ii. 65. *Ach. Rich. bot. méd.* 598. — P. massiliensis *Mill. dict.* P. chia *Desf. cat. hort. par.* — In all the basin of the Mediterranean.

A mere bush. Leaves evergreen, equally pinnate. Leaflets 8–12 usually alternate, with the exception of the 2 upper which are opposite, oval, lanceolate, obtuse, often mucronate, entire and perfectly smooth. Flowers very small, in axillary panicles, similar to those of the other species. Fruits very small, pea-shaped, reddish when ripe. — The sweet, fragrant stimulant resin called *Mastich* is obtained from the trunk by incisions made in the month of August. It is used to strengthen and preserve the teeth, in old obstinate gleet, chronic diarrhœa, &c.

COMOCLADIA.

Flowers ♂ or monœcious. Calyx 3–4-parted, permanent. Petals 3–4, long, larger. Stamens 3–4, short. Ovary 1. Style 0. Stigma 1. Drupe ovate, 1-celled, 1-seeded. Seed somewhat pendulous from a curved funiculus originating at the base of the cavity. Albumen 0. *DC.*

598 *a.* C. dentata *Jacq. amer.* xiii. t. 173. f. 4. *DC. prodr.* ii. 65. — Cuba and St. Domingo. (Guao.)

A tree. Stem erect, not much branched. Leaves pinnated, shining and green above; with a round rachis 6 inches long; leaflets 6–10 on each side, with an odd one, oblong, acuminate, spiny-toothed, veiny and somewhat downy at the back. — Juice milky, glutinous, becoming black by exposure to the air, staining the linen or the skin of the same colour, only coming off with the skin itself, and not removable from linen by washing, even if repeated for many years successively. It is supposed by the natives of Cuba, that it is death to sleep beneath its shade, especially for persons of a sanguine or fat habit of body. This is firmly believed, and there can be no doubt that it is the most dangerous plant upon the Island.

CORYLACEÆ.

Nat. syst. ed. 2. *p.* 170.

QUERCUS.

♂ lax, amentaceous, deciduous. Bract membranous in 4, 5, or more, deep, often divided, segments. Filaments about 8 or more, short, awl-shaped. ♀ separate. Involucre hemispherical, coriaceous, imbricated, single-flowered, entire, much enlarged in the fruit, and externally scaly, or tuberculated. Calyx in 6, minute, deep, sharp, downy segments, closely surrounding the base of the style. Ovary globose, of 3 cells, with 2 ovules in each. Style solitary, short, conical. Stigmas 3, obtuse, recurved. Nut solitary, oval, coriaceous, not bursting, of 1 cell, attached by a broad scar to the inside of the capsule. Embryo solitary, rarely 2, with large plano-convex cotyledons, and a superior radicle.

599. Q. pedunculata *Willd. sp. pl.* iv. 450. — Q. robur *Eng. bot.* t. 1342. *Woodv.* t. 126. *S. and C.* iii. t. 151. *Smith Eng. fl.* iv. 149. — Woods and hedgerows in most parts of Europe. (Oak.)

A large tree, with smooth greyish-brown twigs. Leaves deciduous, sessile or on short stalks, of a thin texture, obovate-oblong, sinuated, with the lobes entire and nearly blunt, diminishing towards the base, each with a single green midrib, proceeding from the common rib; a little blistered and scarcely glossy, with some down occasionally on the under side. Acorns oblong, obtuse, much longer than the hemispherical scaly cup, placed on long peduncles. — Bark powerfully astringent; the powder employed in passive hæmorrhages and diarrhœa, and the infusion or decoction as an astringent gargle, and for injections or fomentations when such applications are requisite. The French used it extensively during the last war as a substitute for Cinchona.

600. Q. sessiliflora *Salisb. prodr.* 392. has similar properties.

601. Q. infectoria *Oliv. voyage* t. 14. 15. *Willd. sp. pl.* iv. 436. *S. and C.* iii. t. 152. — Asia Minor. (Gall oak.)

A small bush. Leaves on short stalks, 1–1½ inch long, oblong, with a few coarse mucronate teeth on each side, bluntly mucronate, rounded and rather unequal at the base, smooth, shining on the upper side. Acorns solitary, long, obtuse, with a hemispherical scaly cup. — From this the oak galls of the shops are all obtained. It appears to have been a mistake to ascribe them to Q. Cerris.

602. Q. coccifera *Linn. sp. pl.* 1413. is infested by an insect belonging to the genus Coccus, and yielding the Kermes dye, from which scarlet cloths are often prepared.

603. Q. falcata *Mich. bor. amer.* ii. 199. *chênes* t. 28. — Q. elongata *Willd. nov. act. berol.* iii. 400. *sp. pl.* iv. 444.— Southern parts of the United States.

A large tree. Leaves deciduous, 3-lobed or sinuated, on long stalks, downy underneath; the lobes divaricating, falcate, with setaceous points, the terminal one longest and straight. — Leaves employed in North America, on account of their astringency, externally, in cases of gangrene.

BETULACEÆ.

Nat. syst. ed. 2. *p.* 171.

BETULA.

♂. Catkins cylindrical, lax, imbricated all round, with ternate, concave scales; the middle one largest, ovate. Filaments 10–12, shorter than the middle scale, to which they are attached. ♀. Catkins similar, but more dense; scales horizontal, peltate, dilated outwards, 3-lobed, 3-flowered. Ovary compressed, bordered, of 2 cells. Styles 2, awl-shaped, downy. Stigma simple. Nut oblong, deciduous, winged on each side, of 1 cell, with a solitary seed.

604. B. alba *Linn. sp. pl.* 1393. *Eng. Bot.* t. 2198. *Smith Eng. Fl.* iv. 153. —Woods and rocks in moist mountainous parts of Europe. (Birch.)

A tall tree, with the epidermis of the trunk whitish and peeling off readily in thin slips. Branches long, slender, nearly erect, covered when young with a short close down. Leaves ovate or slightly deltoid, acuminate, unequally serrated, slightly downy on the underside. Catkins terminal, stalked, pendulous. — Independently of many useful purposes to which the bark of this plant is applicable, it has also been employed as a febrifuge, and yields by distillation a pyrogenous oil of a very peculiar kind to which Russia leather, dressed with it, is said to owe its remarkable odour.

ALNUS.

♂. Catkin lax, imbricated all round with ternate scales, the 2 lateral of which are minute, the central 3-flowered. Calyx tubular, 4-lobed. Filaments 4, opposite the lobes of the calyx. ♀. Catkin firm, ovate, composed of 2-flowered simple scales. Calyx 0. Ovary 2-celled, with 2 parallel, tapering, deciduous styles. Nut ovate, bony, angular, not winged, 2-celled, 2-seeded.

605. A. glutinosa *Gærtn.* ii. 54. *Smith Eng. Fl.* iv. 132. — Betula Alnus *Linn. sp. pl.* 1394. *& E. Bot.* t. 1508. — Meadows and wet places all over Europe. (Alder.)

A small crooked tree, with spreading, round smooth, dark brown branches, glutinous when young. Leaves roundish-wedge-shaped, obtuse, plaited, serrated, glutinous, deep green, with numerous parallel veins, having bundles of hairs in their axils; stipules roundish, entire. — A decoction of the bark is employed as a gargle in relaxation of the mucous membranes of the fauces; and in double the dose of cinchona it has been administered with success in cases of ague.

URTICACEÆ.

Nat. syst. ed. 2. *p.* 175.

URTICA.

♂. Calyx of 4 roundish, concave, obtuse, equal sepals. Stamens 4, awl-shaped, spreading, opposite to the sepals, and about as long; surrounding the rudiment of an ovary. ♀. Sepals 2, equal, roundish, concave. Ovary superior, ovate; stigma sessile, downy. Achenium ovate, rather compressed, polished, embraced by the permanent calyx.

606. U. crenulata *Roxb. fl. ind.* iii. 591. — Eastern parts of Bengal.

Stem erect, shrubby. Bark smooth, ash-coloured, armed with acute burning hairs. Leaves alternate, short-stalked, oblong, acute, crenulate, or slightly dentate, both sides armed with a few burning white hairs; stipules cordate, small, caducous. ♀. Spikes axillary, solitary, dichotomous, with alternate lateral divisions. Flowers numerous. Calyx 4-parted. Ovary ovate, 1-seeded; style 0. Stigma long, villous, fleshy and tapering. — This nettle is reported to be one of the most venomous of the genus. M. Leschenault de la Tour mentions his having been dangerously affected by their sting (see *Nat. syst.* ed. 2. p. 176), of which however Roxburgh says nothing.

607. U. dioica *Linn. sp. pl.* 1396. *E. bot.* t. 1750. *Smith Eng. fl.* iv. 135. — Common in waste ground. (Common nettle.)

Root branching and creeping with fleshy shoots and many fibres. Herb dull green, 2–3 feet high, erect, covered with rigid stinging hairs. Leaves opposite, on long stalks, cordate, spreading, pointed, coarsely serrated, armed with stings. Racemes numerous, much branched, many-flowered. Some plants ♂; others ♀. — Independently of its well-known stinging properties, which indicate the presence of a virulent poisonous principle, a decoction strongly salted, will coagulate milk without giving it any unpleasant flavour; the whole plant is esteemed astringent and diuretic. *Burnett.*

608. U. heterophylla *Willd. sp. pl.* iv. 362. *Roxb. fl. ind.* iii. 586. — (*Rheede* ii. t. 41.) — Mountains of Malabar.

An annual. Stem erect, angular, with small white specks, in which are inserted strong stiff acute rigid bristles, pointing in every direction. Leaves alternate, long-stalked, cordate, lobed, towards the top of the plant almost palmate, all coarsely serrate, armed with the same bristles as the stem and branches, and some harsh pubescence besides; from 4 to 8 inches long, and nearly as broad; petioles about half the length of the leaves, channelled and armed; stipules large, cordate, ending in 1 or 2 acute points. Peduncles axillary, the lower supporting the male flowers; those towards the apex of the plant, the female ones, in large

glomerate, variously divided spikes. ♀. Calyx cymbiform, tridentate. — Very severe, but not permanent, pain is produced by the sting of this species.

BÖHMERIA.

♂. Calyx 4-parted. Hypogynous cup 0. Filaments 4, subulate; anthers roundish, didymous. ♀. Calyx 0, except a single oblong scale or bractlet, of which several are clustered together. Ovary 1, obovate, to each scale. Style long, filiform, feathery. Achenium crowned by the permanent style.

608 *a.* B. caudata *Swartz fl. ind. occ.* i. 279. *Willd.* iv. 340. — Woods of Jamaica (*Swartz*) of Brazil (*Martius*).

Stem suffruticose. Leaves very large, opposite, ovate, acute, veiny, serrated. Racemes very long, pendulous. Flowers diœcious. — This plant is called Asapeixe in Brazil, according to Von Martius, who states that "A decoction of its leaves in baths, is prescribed in hemorrhoidal complaints, and is said to produce extraordinary effects. In the northern parts of Brazil, where that plant does not grow, they use, instead of it, several kinds of Böhmeria and of Urtica. The family of the Urticaceæ seems, from the favourable results of the general use made of it, to be very useful in disorders affecting the vena porta perhaps from the combination of viscous, acrid, and alkaline parts in their stalks and leaves." *Martius Travels, Eng. Trans.* ii. 94.

HUMULUS.

♂. Sepals 5, oblong, concave, obtuse. Filaments 5, capillary, very short. Anthers vertical, oblong, of 2 cells, opening by 2 lateral slits. ♀. Catkin of numerous, membranous, imbricated, concave bracts, 1 to each floret. Calyx none, except a bractlet which embraces the ovary and grows with it after flowering. Stigmas 2, awl-shaped, spreading, downy. Achenium attached to the base of each enlarged, membranous, dry scale of the catkin, roundish; pericarp hard, brittle, covered by roundish aromatic superficial glands, or lupuline.

609. H. Lupulus *Linn. sp. pl.* 1457. *E. Bot.* t. 427. *Mill. illustr.* t. 88. *Smith Eng. fl.* iv. 240. *Bigelow Amer. Bot.* iii. t. 164. — Common in hedges in many parts of Europe. — Often wild in the United States. (Hops.)

A perennial plant, with annual stems, climbing to a great height, twining from right to left, angular, rough, with minute reflexed hairs. Leaves opposite on long winding petioles, the smaller ones heart-shaped, the larger ones 3- or 5-lobed, serrated, veiny and extremely rough. Flowering branches axillary, angular and rough. Stipules 2 or 4, between the petioles, ovate, reflexed. Flowers numerous and of a greenish colour. Those of the males very numerous and panicled. Sepals 5, oblong, obtuse, spreading, concave. Stamens short; anthers oblong, bursting by 2 terminal pores. The female flowers, growing on a separate plant, are in the form of a catkin, having each pair of flowers supported by a bract, which is ovate, acute, tubular at base. Sepal solitary, obtuse, smaller than the bract and infolding the ovary. Ovary

roundish, compressed; stigmas 2, long, subulate, downy. The bracts enlarge into a persistent catkin, each bract enclosing a nut enveloped in its permanent bractlet, and several grains of yellow lupuline. — The ripe catkins are said to be narcotic and extremely bitter; pillows stuffed with them have been used as agreeable sedatives. The infusion and tincture act as pleasant aromatic tonics; but Mr. Pereira doubts the existence of the narcotic effects that have been ascribed to hops. Certain yellow grains called Lupuline, found sticking to the surface of the fruit, are considered to be the seat of the active principle.

FICUS.

Flowers monœcious, placed all over the inside of a large fleshy hollow receptacle, which is closed up with a few scales. ♂ irregular, of several unequal membranous segments. Stamens 1–5. ♀. Calyx about 5-parted, membranous, converging over a simple carpel, containing 1 suspended ovule, and terminated by a subulate style and bifid stigma. Achenium lenticular, hard, dry. Embryo curved, in the midst of fleshy albumen.

610. F. Dæmona *Vahl. enum.* ii. 198. *Roxb. fl. ind.* iii. 562. — Seacoast of Tanjore.

Young shoots densely clothed with thick, soft, appressed, white hairs. Leaves in general opposite, stalked, oblong, and oblong cuneate, acute, serrate, above smooth, and hard, downy underneath, and elegantly reticulated with numerous, soft, hairy veins, from 2 to 12 inches long, often oblique, with a smooth green gland in the axils of the veins on the under side; petioles round, pubescent, with a green gland on each side, at the base; stipules within the leaves, deciduous. Fruit usually in pairs, in radical withering racemes, which are frequently of great length, with their apices penetrating the earth. In their native soil the whole raceme, and fruit are often entirely under ground; the fruit is also found singly or in pairs on the trunk and branches, though less frequently than on the root. It is generally about the size of a large nutmeg, obovate, very hairy; the mouth shut with numerous scales, the exterior ones glandular and more remote; several obscure, equidistant ridges run from the eye towards the base. Male florets monandrous. — Juice extremely poisonous.

611. F. indica *Linn. sp. pl.* 1514. *Willd.* iv. 1147. *Roxb. fl. ind.* iii. 539. — (*Rheede* i. t. 28. *Rumph.* iii. t. 84. bad.) — East Indies. (Banyan Tree.)

Branches spreading, sending down roots which strike into the earth and, enlarging in diameter, become new trunks, by means of which the tree gradually extends over a large extent of ground. Leaves stalked, ovate-cordate, 3-nerved, entire, when young downy on both sides, when old less so; petiole with a broad smooth greasy gland at the apex, compressed, downy; stipules sheathing downy. Fruit in axillary pairs, the size of a cherry, round and downy. — Gum lac is obtained from this in abundance. The white glutinous juice is applied to the teeth and gums to ease the toothach; it is also considered a valuable application to the soles of the feet when cracked and inflamed. The bark is supposed to be a powerful tonic, and is administered by the Hindoos in diabetes.

612. F. elastica *Roxb. fl. ind.* iii. 541. — Mountains on the North of Silhet.

A tree, the size of a sycamore. Leaves alternate, stalked, smooth, oval or oblong, quite entire, acute, glossy, with numerous fine diverging veins; midrib strong, smooth, deeply stained with red; stipules sheathing, tapering, convolute, bright red. Fruit sessile, in pairs, oval, greenish-yellow, about the size of a fig. — A great quantity of tenacious juice flows from the branches when wounded, and inspissates into an excellent kind of Caoutchouc, which is now imported. There is no reason to doubt that many other species of this genus yield a juice with quite the same properties. It is believed that the Java Caoutchouc is produced exclusively by figs.

613. F. racemosa *Linn. sp.* 1515. *Willd.* iv. 1146. — (*Rumph.* iii. tt. 87, 88. *Rheede* i. t. 25.) — East Indies.

Leaves 3 inches long and more, covered with white dots, oblong-lanceolate, acute, but little narrowed to the base, 3-nerved, veiny, on the upper side dark-green and shining, on the under very much marked with green dots; petiole ¼ an inch long and more. Fruit racemose. — The bark is slightly astringent, and has particular virtues in hæmaturia, and menorhagia. The juice of the root is considered a powerful tonic.

614. F. septica *Forst. prodr.* ii. 407. Leaves emetic.

615. F. toxicaria *Linn. mant.* 305. Juice a virulent poison.

616. F. religiosa *Linn. sp. pl.* 1514. *Willd.* iv. 1134. *Roxb. fl. ind.* iii. 547. — (*Rheede* i. t. 27.) — Common all over the East Indies.

A very large tree, with a rent rugged trunk. Leaves stalked, cordate, ovate, very much acuminate, with the margins scolloped, smooth on both sides, bright green above; stalks long, round, smooth. Fruit sessile, in pairs, depressed, when ripe the size and colour of a small black cherry. — Seeds considered by the doctors of India to be cooling and alterative.

617. F. Carica *Linn. sp. pl.* 1513. *Willd.* iv. 1131. *Roxb. fl. ind.* iii. 528. *Woodv.* t. 130. *S. and C.* iii. t. 154. — Persia and Asia Minor. (Common Fig.)

A small crooked tree or large bush. Branches round, green or russet, covered with a coarse short down. Leaves rough on the upper side, coarsely downy beneath, cordate, 3–5-lobed, or almost entire, coarsely serrated. Fruit solitary, axillary, more or less pear-shaped or almost round, succulent, sweet and pleasant to the taste. — All the parts abound in an acrid milky juice which produces a disagreeable burning sensation in the fauces. When quite ripe this disappears in the fruit, which become sweet high-flavoured wholesome and delicious. Eaten in moderation they are digestible; but in too great quantity they occasion flatulence and diarrhœa. They are pectoral and demulcent, and occasionally eaten to remove habitual costiveness. Roasted and split they are sometimes used as poultices for gum-boils and other circumscribed maturating tumours. They are employed in making the Confection of Senna and similar preparations.

CANNABIS.

Flowers dicœcious. ♂. Flowers racemose. Calyx 5-parted, imbricated. Stamens 5; anthers large, pendulous. ♀. Flowers in spikes. Bract acuminate, rolled round the ovary in the room of a calyx. Ovary roundish; with 1 pendulous ovule, and 2 long filiform glandular stigmas. Achenium ovate, 1-seeded; embryo doubled up, with the radicle parallel with the plano-convex cotyledons and separated from them by a small quantity of albumen.

618. C. sativa *Linn. sp. pl.* 1457. *Willd.* iv. 768. *Woodv.* t. 27.—(*Rumph.* v. t. 77. *Rheede* x. t. 60 and 61.)—Persia; hills in the north of India; whence it has been introduced into other countries. (Hemp.)

An annual, about 3 feet high, covered all over with an extremely fine rough pubescence, which is hardly visible to the naked eye. Stem erect, branched, bright green, angular. Leaves alternate or opposite, on long weak petioles, digitate, scabrous, with linear-lanceolate sharply serrated leaflets, tapering into a long smooth entire point; stipules subulate. Clusters of flowers axillary, with subulate bracts; the males lax and drooping, branched and leafless at the base, the females erect, simple and leafy at the base. ♂. Calyx downy. ♀. Calyx covered with short brownish glands.—A very powerful stimulating narcotic, much used in some countries as an intoxicating drug. Under the names of Banga, Bang, or Ganga in India, of Kinnab (the root of the word Cannabis) or Hashish in Arabia, Malach among the Turks, Dacha with the Hottentots, the dried leaves are universally employed either mixed with Tobacco for smoking or in the form of powder which is swallowed in some fluid. The male flowers are employed in a similar manner. In Nepal a narcotic gum resin called Cherris is supposed to be obtained from Hemp. The best of all cordage is manufactured from the tough woody tissue of the stems. Hemp seed is nutritious and not narcotic; it has the very singular property of changing the plumage of bullfinches and goldfinches from red and yellow to black if they are fed on it for too long a time or in too large a quantity. *Burnett.*

MORUS.

Flowers monœcious. ♂ spiked. Calyx 4-parted, spreading, membranous. Stamens 4, longer than the calyx, with the rudiment of an ovary between their bases. ♀ clustered. Sepals 4, scale like, imbricating each other; 2 being opposite and external to the other 2. Stigmas 2, linear, glandular; ovule solitary, suspended. Fruit consisting of the female flowers become fleshy and grown together, each enclosing a dry membranous pericarp. Seed pendulous; embryo curved like a horse shoe, amongst fleshy albumen, with the radicle directed to the hilum.—Trees.

619. M. nigra *Linn. sp. pl.* 1398. *Willd.* iv. 369. *Woodv.* t. 243. — Μορέα ἡ συκαμινέα. *Dioscor.* — Persia; whence it has been carried to other parts of the world. (Mulberry.)

A small tree, with a very rugged bark. Young shoots downy, round. Leaves roundish-cordate, pubescent, coarsely serrated, rough to the touch, slightly acuminate; stipules oblong, membranous, downy, the length of the petiole or longer, deciduous. Fruit oblong, changing from red to deep purple, succulent, subacid, juicy and pleasant. — Fruit cooling and laxative; when not too ripe allays thirst and proves exceedingly grateful in febrile diseases. When eaten too freely, as an article of food, it is apt to occasion diarrhœa. *Thomson.* Bark said to be cathartic and anthelmintic.

620. M. alba *Linn. sp. pl.* 1398. — China and Persia.

Leaves deeply cordate, unequal at the base, ovate or lobed, unequally serrated, nearly smooth. — Root said to be an excellent vermifuge.

DORSTENIA.

Monœcious; flowers arranged upon a fleshy receptacle usually flat and expanded and extremely variable in form. ♂. on the surface of the receptacle 2-lobed, fleshy, diandrous. ♀ immersed in the receptacle, also 2-lobed in most species. Ovary 1–2-celled, with a single suspended ovule in each cell; style 1; stigma 2-lobed. Achenia lenticular, imbedded in the fleshy receptacle; from which they are projected with elasticity when ripe. — Dwarf herbaceous plants with scaly rhizomata.

Under the name of Contrayerba or Contrayerva there is imported from the West Indies an officinal root, which has stimulant sudorific and tonic qualities. It is used in malignant eruptive diseases, dysentery, some kinds of diarrhœa, atonic gout, chronic rheumatism and the fever attending dentition in weak infants. According to the last edition of the London Pharmacopœia this drug is produced by Dorstenia Contrayerva; Dr. Houston however asserted that it came from D. Houstoni and another species referred by Botanists to D. Drakena. Guibourt says there are two kinds, one furnished by D. brasiliensis, and the other by D. Contrayerva, D. Houstoni and D. Drakena. Finally Dr. Theodore Martius refers the drug to D. brasiliensis, Contrayerva, Houstoni, and an undescribed species which he calls D. opifera, a sort which is more farinaceous than the others. The only conclusion from all which is I think that Contrayerva is produced by several species.

621. D. Contrayerva *Linn. mat. med.* 53. *Willd.* i. 683. *Blackw.* t. 579. *Jacq. ic.* iii. t. 614. — New Spain, Mexico, Peru, Tobago, St. Vincent's, *Willd.*

Caulescent; stem covered with spreading green scaly stipules. Leaves palmate; the lobes lanceolate, acuminate, coarsely serrated and gashed, occasionally almost pinnatifid. Receptacle on avery long stalk, quadrangular, wavy or plaited.

622. D. brasiliensis *Lam. encycl.* ii. 314. *Willd.* i. 682. — D. cordifolia *Swartz. fl. ind. occ.* 275. *Willd.* l. c. D. tubicina

Hooker in Bot. mag. t. 2804. Caa-apia *Marcgr. bras.* 52. *ic.* — Jamaica, Brazil, Trinidad.

Root oblong, woody, præmorse, powerfully aromatic. Stemless. Leaves cordate, oblong, obtuse, crenulated, serrated, or toothletted, cucullate at the base. Scape as long as the petioles. Receptacle orbicular, somewhat cupshaped, crenated at the margin. — The tuberous root is used like the Serpentaria against nervous fevers and general debility, as well as against the bite of serpents, and when quite fresh, is said to operate more powerfully than that, but more speedily to lose its virtue. Sometimes also it serves as a gentle emetic. This plant is frequently confounded with other species of Dorstenia, all which, however, are inferior to it in salutary virtue. It is not to be doubted that the Contrayerva of the druggists' shops would always have retained the reputation it once enjoyed, if, instead of the weaker Mexican and West Indian species, this Brazilian kind had become an article of commerce. It grows in strong clayey soils, in the mountainous parts of S. Paulo and Minas, whereas the other species prefer the shade of moist woods, and rich mould. In this plant, as is the case with several in Europe, which grow both on low grounds and on eminences, it is observed that those from the mountains are more powerful. *Martius.*

623. D. Houstoni *Mill. dict.* No. 2. *Willd.* i. 682. — *Houston in phil. trans.* No. 421. p. 195. fig. 5. — High rocky ground near Campeachy.

Stemless. Leaves cordate, entire, or palmately angular, acute. Receptacle quadrangular, wavy.

624. D. Drakena *Mill. dict.* No. 3. *Willd.* i. 683. — *Houston* l. c. fig. 4. — High ground near Vera Cruz.

Stemless. Leaves cordate, interruptedly pinnatifid with the segments ovate, acute, entire. Receptacles oval, entire.

ANTIARIS.

Monœcious. ♂ on a convex fleshy receptacle, scaly on the under side and there attached by a stalk in the middle. Sepals 3–4, imbricated. Anthers 3 or 4, nearly sessile. ♀ solitary on a scaly peduncle. Calyx 0. Ovary 1-celled; ovule inverted. Style 2-parted. Fruit a fleshy 1-seeded drupe. Embryo inverted, without albumen.

625. A. toxicaria *Lesch. in ann. mus.* xvi. 476. t. 22. *Blume Rumphia* i. tt. 22, 23. p. 56. — (*Rumph.* ii. t. 87.) — Islands of the Indian Archipelago, particularly Java, Baly, and Celebes. (Antsjar or Upas.)

A very large tree. Leaves oval-oblong, obtuse, or rather acute, unequally cordate, when young toothletted and hairy on both sides. Peduncles simple. ♀. Flowers turbinate, downy, pedicellate. ♂. Receptacle fungus-like, green, and downy. — One of the most virulent of known poisons. Some persons are exposed to danger when they only approach the trees; Leschenault de la Tour sent a man up into a tree, he became very ill, his body swelled, and for several days he suffered severely (dirissimè excruciabatur) by vertigo, nausea and vomiting; others nevertheless experience no inconvenience from the

exhalations of the tree. It is asserted that tumours, pustules attended by intolerable itching, and severe inflammation of the eyes attack those who fell the trees. Blume considers it to act chiefly upon the vascular system, and he describes the symptoms attending its administration in the following words:—The poison of the Antjar acts differently upon different animals, which may be owing more to certain peculiarities of organisation or to the chemical nature of their fluids, than to the quantity of poison they absorb. Thus the more robust mammalia, such as the *Bos Karabouw*, are killed more slowly than dogs; and these resist the action of the poison longer than apes, cats, bats, and some kinds of birds even of the larger kinds which perish rapidly, while fowls, &c., are little affected by it, and either recover or die after a much longer time than any of the above-mentioned animals, even mammalia. The peculiar nature of different kinds of animals will explain this in a great degree; and renders the symptoms attending the operation of the poison far from being always the same. Those observed in mammalia are as follows: in a short time, only a few minutes after the animal has been wounded with either the prepared or the crude poison, it becomes anxious and restless, is attacked by frequent shiverings, and expresses its pain by moanings and loud cries, while the intestines are in the meanwhile emptied of their contents. This is followed by faintness, panting, contraction of the extremities, a flow of mucous saliva from the mouth, attempts at vomiting, violent spasmodic contractions of the pectoral and abdominal muscles, and then a vomiting of a yellow or whitish frothy matter occasionally mixed with fæces. At last breathing becomes much interrupted, the debility of the muscles and the pain reach their highest point, urine and other excrements are discharged involuntarily, and in the midst of convulsions death ensues. Dissection exhibits the following symptoms: — Traces of inflammation are perceptible where the poison has reached among the muscles, which appear bloodshot. The skin and the muscles of many animals destroyed by this poison, especially the pectoral muscles, tremble under the dissecting knife. The colour of the muscles, especially at the extremities, is paler than when healthy. A small quantity of serous fluid is found in the cavity of the abdomen. More blood than usual is injected into the vessels of the intestines, especially of the liver, and, if the poison has been absorbed slowly, and not with sudden violence, of the stomach also; but the vessels of the latter are less distended with blood when death has taken place among violent convulsions without previous vomiting. In that case also the stomach is not so much distended with gas as when the poison has been slow in its operation, nor is its interior lining so much covered with a yellow frothy substance. But it is principally in the pectoral cavity that a morbid appearance is observable, the blood being congested in the lungs and all the larger vessels, as the aorta, the vena cava, and the arteries and veins of the lungs. The colour of the lungs is healthy; the blood of the aorta and arteries is duly oxydated, and spirts out with violence when they are punctured, congealing presently afterwards. The colour of the blood of the veins is dull as usual. The brain exhibits no trace of the poison, unless a slight congestion of blood in the dura mater is to be ascribed to it.

Notwithstanding its virulence the concrete juice has been used medicinally: but even in minute doses it produces violent vomiting and purging, and seems to be too dangerous to be employed except with extreme caution.

ULMACEÆ.

Nat. syst. ed. 2. *p.* 178.

ULMUS.

Calyx turbinate, shrivelled, permanent; in 4, 5, 6, or more, upright segments, coloured on the inner side. Filaments as many as the segments of the calyx, and twice as long, inserted into the tube opposite each segment. Anthers erect, short, with 4 furrows, and 2 cells, bursting lengthwise externally. Ovary compressed, cloven at the summit; stigmas 2, terminal, spreading, downy, shorter than the calyx, finally inflexed. Fruit membranous, compressed, orbicular or somewhat oblong, with a notch at the extremity. Seed solitary, roundish, slightly compressed.

626. U. effusa *Willd. sp. pl.* i. 1325. *N. and E. plant. med.* t. 103. — U. pedunculata *Fougeroux. Poir. encycl.* ii. p. 610. — Woods in the southern parts of Europe.

A small tree. Branches erect, when old a bright chesnut brown and smooth, when young densely clothed with down. Leaves smooth and rather shining on the upper side, soft with down on the under; obovate, acuminate, sharply and doubly serrated, extremely unequal at the base. Flowers small, on long slender stalks. Fruit ovate, bifid, coarsely reticulated, bordered with a deep thick fringe of hairs, on smooth slender stalks twice as long as themselves. — See the next species.

627. U. campestris *Linn. sp. pl.* 327. *E. Bot.* xxvii. t. 1886. *Smith Eng. Fl.* ii. 20. — Woods and hedges.

Trunk rather crooked, with a rugged bark, and spreading, round, zigzag, brown, leafy branches. Leaves about 2 inches long, and 1 broad in the middle, doubly serrated, contracted towards each end; unequal at the base, as in every known species; dark green, and very rough to the touch, on the upper side; paler and smoother beneath, with a prominent midrib, and several transverse parallel ribs, which have each a small tuft of downy hairs at the origin. Flowers much earlier than the foliage, and from inferior buds, in numerous dense, round, dull purple tufts, each flower almost sessile, with an oblong fringed bractea at its base. Limb of the calyx in 4 oblong obtuse segments, of a light brownish-red, minutely fringed. Stamens 4, equal, with dark purple anthers. Stigmas a downy line along the upper edge of each style, which line is never elongated but becomes incurved, from the great dilatation of the opposite margin, running down into the bordered, oblong-wedgeshaped, or nearly obovate, flat, pale brown, somewhat shining, capsule, which has a deep sinus at the extremity, bordered with the styles, and extending towards the seed. *Smith.* — The inner bark of the Elm is demulcent and diuretic; it is also slightly astringent and therefore a feeble tonic. It has been used in some skin diseases, but is rarely resorted to. Mr. Pereira mentions U. glabra as another species officinally employed. The bark should be stripped in the spring.

MYRICACEÆ.

Nat. syst. ed. 2. *p.* 179.

MYRICA.

♂. Catkins ovate-oblong, consisting of bracts loosely imbricated in every direction. Calyx 1 or 2 subulate scales. Bracts ovate, bluntish, concave, each containing 4, rarely more, short, capillary, erect filaments. Anthers vertical, large, of 2 divided lobes. ♀. Catkins as in the ♂ but more compact. Sepals 2, ovate, acute, scale-like. Ovary ovate, flattish, superior. Stigmas 2, thread-shaped, spreading, longer than the sepals. Fruit baccate, 1-celled, various in substance. Seed 1, erect.

628. M. Gale *Linn. sp. pl.* 1453. *Eng. Bot.* t. 562. *Smith Eng. Fl.* iv. 239. — Bogs and marshes. (Sweet Gale.)

Stem upright, bushy, 3 or 4 feet high, with numerous alternate branches. Leaves alternate, on short stalks, obovate-lanceolate, acute, serrated in their upper parts, 1½ inch long, deciduous; green and smooth on both sides; the under side palest. Catkins numerous, sessile, formed during summer in the bosoms of the leaves, and remaining through the winter. In the following March they are full-grown, expanding in May. Scales of a red shining brown; the lower ones of the female catkins hairy towards the tip. *Smith.* Fruit extremely fragrant, consisting of an achenium placed between 2 succulent, ovate fleshy sepals, which adhere to its sides, all covered with waxy aromatic granulations. Seed solitary, erect. — The infusion has been used to cure the itch, and also as a vermifuge. The leaves are used in Sweden as a substitute for hops in brewing.

629. M. cerifera *Linn. sp. pl.* 1453. *Willd.* iv. 745. *Bigelow med. bot.* iii. t. 43. — Woods in the United States. (Wax myrtle or Bayberry.)

A branching half-evergreen bush from 1 to 12 feet high. Leaves cuneate-lanceolate, sometimes entire, but more frequently toothed, particularly toward the end, somewhat pubescent, a little paler beneath, and generally twisted, or revolute in their mode of growth. The flowers appear in May before the leaves are fully expanded. The males grow in catkins, which are sessile, erect, about half an inch or three quarters long; originating from the sides of the last year's twigs. Every flower is formed by a concave rhomboidal scale, containing 3 or 4 pairs of roundish anthers on a branched footstalk. The females, which grow on a different shrub, are less than half the size of the males, and consist of narrower scales, with each an ovate ovary, and two filiform styles. To these catkins succeed clusters or aggregations of small globular fruits resembling berries, which are at first green, but finally become

nearly white. They consist of a hard stone inclosing a dicotyledonous kernel. This stone is studded on its outside with small black grains resembling fine gunpowder, over which is a crust of dry white wax, fitted to the grains and giving the surface of the fruit a granulated appearance. *Bigelow.* — Bark of the root acrid and astringent, in large doses producing vomiting accompanied by a burning sensation; costiveness generally follows its use. The powder stimulating and very acrid. The fruit is covered with a waxy aromatic secretion which may be collected and purified, and which is used for many of the purposes for which beeswax and candles are employed. It has occasionally been used in pharmacy in various compositions intended for external use, and is mild or stimulating according as it is more or less pure. *Bigelow.*

COMPTONIA.

♂. A cylindrical loosely imbricated catkin, with deciduous 1-flowered bracts. Sepals 2. Stamens 6, adhering in pairs. ♀. Catkins ovate, densely imbricated, with 1-flowered bracts. Sepals 6 larger than the bracts. Styles 2, capillary. Nut 1-seeded.

630. C. asplenifolia *Ait. Kew.* iii. 334. *Willd.* iv. 320. *Pursh. fl. am. sept.* ii. 635. — Liquidambar asplenifolium *Linn. sp. pl.* 1418. — Mountains and woods of the United States. (Sweet fern.)

A small bush, 3–4 feet high, yielding a powerful aromatic fragrance when rubbed. Leaves long, linear, pinnatifid, brown and rather downy on the under side, shining on the upper, the lobes almost in the form of a right angled triangle the apex of which has been rounded off with the perpendicular next the upper end of the leaf. — A tonic and astringent. In North America it is a favourite domestic remedy in the cure of diarrhœa.

JUGLANDACEÆ.

Nat. syst. ed. 2. *p.* 180.

JUGLANS.

Flowers monœcious. ♂ amentaceous. Bracts scale-like, adhering to the sepals and thus having the appearance of being toothed. Stamens 18–24; filaments very short; anthers with a broad connective, opening longitudinally. ♀ clustered, or solitary. Calyx superior, 4-toothed. Petals 4, minute. Ovary 1-celled, with a single erect ovule; stigmas 2, recurved. Drupe inferior, with the sarcocarp fleshy and spontaneously splitting off the bony 2-valved furrowed stone. Seed erect with deeply corrugated cotyledons.

631. J. cinerea *Linn. sp. pl.* 1415. *Jacq. ic. rar.* i. t. 192. — *Bigelow med. bot.* iii. t. 32. — J. cathartica *Mich. arbres forest.* i. 165. — Forests in the United States. (Butternut.)

Leaves pinnate, very long, of 15–17 leaflets, each of which is 2 or 3 inches long, rounded at base, acuminate, finely serrate and downy. The flowers appear in May before the leaves are expanded to their full size. The barren flowers hang in large catkins from the sides of the last year's shoots, near their extremities. The scales which compose them are oblong and deeply cleft on each side into about 3 teeth or segments. The anthers are about 8 or 10 in number, oblong and nearly sessile. The fertile flowers grow in a short spike at the end of the new shoot; they are sessile and universally pubescent and viscid; when fully grown, they seem to consist of a large oblong ovary and a forked feathery style. The top of the ovary, however, presents an obscurely 4-toothed calyx. Within this is a corolla of 4 narrow lanceolate petals growing to the sides of the style. The style divides into 2 large, diverging, feathery stigmas nearly as long as the ovary. These flowers are somewhat later than the catkins in their appearance. Fruit sessile, several together on the sides and extremity of a long peduncle, of a green colour, brown when ripe, oblong-oval, pointed, hairy, and extremely viscid. The nut is of a dark colour, carinated on both sides, sharp pointed, its whole surface roughened by deep indentures and sharp prominences. The kernel is more regular than in most nuts of its kind, is very oily, pleasant to the taste when fresh, but acquires a rancid taste by age. *Bigelow.* — Inner bark, especially of the root, a very mild, innocent and efficacious laxative; usually employed in America in the form of an extract. Bark of the stem said to be rubefacient.

632. J. regia *Linn. sp. pl.* 1415. *Willd.* iv. 455. — Persia. (Common Walnut.)

A large tree. Branches even when young quite smooth, angular, and a little speckled. Leaves pinnated, smooth, when bruised having a strong heavy and yet aromatic smell; leaflets about 9, oval, smooth, somewhat serrated, nearly all of the same size. Fruit quite smooth, globose or oblong. — In Circassia the tree is pierced in the spring and a spigot left for some time in the hole. When the spigot is withdrawn a clear sweet liquor flows out, which is left to coagulate; and on some occasions they refine it. The Circassians consider it a most valuable medicine for diseases of the lungs and general debility. *Spencer's Circassia.* The very young fruit, bruised and formed into a conserve by boiling in coarse sugar, forms an agreeable and effectual purgative, without griping.

CHLORANTHACEÆ.

Nat. syst. ed. 2. p. 183.

CHLORANTHUS.

Flowers spiked, each with a bract. Calyx 0. Anther solitary and 2-celled, or triple and 4-celled, with a thick fleshy connective; seated on the exterior side of the ovary. Stigma sessile. Drupe baccate, 1-seeded.

633. C. officinalis *Blume enum.* i. p. 79. *Fl. Jav. ic.* — Moist woods of Java, at the elevation of 1500—3000 feet above the sea.

A smooth shrub, 3–4 feet high. Branches opposite, straggling, tumid at the articulations, fistular when young. Leaves spreading, opposite, stalked, oblong, acuminated at each end, with glandular serratures, thin, shining, and somewhat blistered; petioles short, taper, combined at the base along with the intrafoliaceous stipules into a membranous sheath, which has 2 setaceous teeth on each side. Spikes terminal, branched. Bracts dotted with glands. Anther white, changing to yellow, 3-lobed; the middle lobe 2-celled, the laterals each 1-celled. Drupes straw-coloured. — All the parts powerfully aromatic; the leaves and stems become insipid by keeping, but the roots, if quickly dried and carefully preserved retain their properties for a long time. They have a fragrant camphor-like smell and an aromatic bitterish taste, and resemble in appearance those of Aristolochia serpentaria: like which they are among the most efficacious] medicinal stimulants which the Vegetable Kingdom produces. The mountaineers of Java employ the roots in infusion or rubbed up with the bark of Cinnamomum Culilawan as a remedy for spasms in pregnant women. In like manner, mixed with such carminative substances as Anise and Ocymum they are employed with the greatest success in the malignant small-pox in children. An infusion of the dried root is successfully employed in fevers attended with great muscular debility and a suppression of the functions of the skin. In a typhus which ravaged certain districts of Java, in consequence of long continued rains, following an unusually protracted dry season, the symptoms attendant upon which were extreme debility, a languid pulse, stupor, violent vomiting and bilious evacuations, the roots of this Chloranthus were of the greatest service. It was again employed most beneficially in a malignant intermittent fever which visited Java in the year 1824. In such cases the infusion was usually combined with a decoction of Cedrela Toona. This root has the great merit of preserving its active properties for a long time if properly prepared, and there can be no doubt that it is one of the most efficacious of all known remedial agents wherever there is a necessity for continual and active stimulants. *Blume.*

633 *a*. C. brachystachys *Blume fl. jav. ic.* — Ascarina serrata *Blume enum.* i. 80. — High woods on the coast of Java.

An upright bush about 3 feet high, quite smooth in all its parts. Leaves obovate-lanceolate, tapering very much into the petiole, sharply serrate. Spikes short, terminal, branched. Bracts glandular. Anther simple, 2-celled, growing from the side of the ovary. — Properties like those of the last species.

PIPERACEÆ.

Nat. syst. ed. 2. *p.* 185.

PIPER.

Stamens varying in number between 1 and 10. Stigma 3-lobed. Fruit baccate.

634. P. nigrum *Linn. sp. pl.* 40. *Bot. mag.* t. 3139. *Nees and Eberm. handb.* i. 98. *plant. med.* 21. — P. aromaticum *Poir. enc. meth. suppl.* v. 458. *Fée cours.* ii. 618. (*Rheede hort. mal.* vii. t. 12. *Marsden's hist. of Sumatra* 105.) Πεπερι *Dioscor.* — Cultivated in various parts of India and its islands; also in the West Indies. (Black Pepper.)

Stem trailing or climbing, shrubby, flexuose, and dichotomously branched, jointed, swelling at the joints, and often throwing out radicles there which adhere to bodies like the roots of Ivy, or become roots striking into the ground. Leaves from 4 to 6 inches long, alternate, distichous, broadly ovate, acuminated, of a full green and glossy colour, paler beneath, 5 to 7-nerved, the nerves connected by lesser transverse ones or veins, and prominent beneath. Petioles rounded, from half an inch to nearly 1 inch long. Spikes opposite the leaves, chiefly near the upper ends of the branches, stalked, from 3 to 6 inches long, slender, drooping, apparently some male, others female, while sometimes the flowers are furnished with both stamens and pistil; stamens 3. Fruit ripening irregularly all the year round, sessile, the size of a pea, at first green, then red, afterwards black, covered by pulp. — The hot acrid black pepper of the shops consists of the berries dried with the pulp adhering; the white pepper is the same thing only the pulp is washed off before the fruit is dried. It is principally used as a condiment to stimulate the stomach and promote digestion. As a medicine it is employed in the form of ointment mixed with lard, against tænia capitis; in affections of the mouth and throat requiring a powerful acrid such as relaxed uvula, or paralysis of the tongue it may be employed as a masticatory. In spirit and water it is a popular remedy for preventing the return of a paroxysm of intermitting fever. Pepper is the active ingredient in a quack medicine called Ward's paste, employed in cases of fistula, piles and ulcers about the rectum. A crystalline substance called Piperin, obtained from this spice, has

been recommended and employed by the Italians as a febrifuge in intermittent fevers. It is said to be more certain and speedy, and also milder in its operation than the Cinchona alkalies. See *Pereira in Med. Gaz.* xx. 180. In excessive doses Pepper is a dangerous stimulant.

635. P. trioicum *Roxb. fl. ind.* i. 151. — Mountains of India in the Raja-mundri Circar; delighting in a moist rich soil, well shaded with trees.

Roots long, striking deep into the earth. Stem jointed, winding, when old woody, and scabrous, running along the ground to a great extent, or up trees, &c. when trained to them; from each joint issue roots which take firm hold of whatever they meet with. Branches numerous, alternate; the young ones smooth, the old ones woody, and scabrous like the stem. Leaves alternate, petioled, cordate, broad-oval, ovate, or oblong, pointed, glaucous, from 5 to 7-nerved, smooth and glossy. Stipules sheathing, deciduous. Flowers diœcious. ♂. Spikes opposite the leaves, stalked, filiform, pendulous, closely imbricated with 5 spiral rows of fleshy, oval, scales. Filaments 3, very thick, and very short, scarcely elevating the anthers above the margins of the scales. Anthers 4-lobed. ♀. Spikes opposite the leaves, shorter, thicker, and more rigid than in the male, imbricated with 3 spiral rows of scales. Ovary sessile, globose, immersed in the substance of the spike. Fruit succulent, small, round, red. Flowers sometimes hermaphrodite. — Fruit exceedingly pungent, reckoned by pepper merchants at Madras equal if not superior to the best pepper of the Malabar coast or Ceylon. See *Roxb.* l. c. for important matter relating to the Pepper vines.

636. P. longum *Linn. sp. pl.* 41. *Nees. and Eberm. handb.* i. 101. *plant. med.* t. 23. *Roxb. fl. ind.* i. 154.—(*Rheede* vii. t. 14.) — India, wild among bushes on the banks of water-courses, up towards the Circar mountains; much cultivated. (Long Pepper.)

Root woody, perennial. Stems many, creeping, jointed, round, downy when young. Branchlets bearing the fruit erect, with the leaves sessile or nearly so. Leaves on the creeping branches largest, stalked, broad-cordate, 7-nerved; on the erect fruit-bearing branchlets amplexicaul, oblong-cordate, 5-nerved; all smooth, somewhat wrinkled; below pale green. Stipules of the petioled leaves 2, adhering to the petiole and lanceolate; of the sessile leaves intrapetiolar, single, spathiform. ♀. Spike sessile, opposite a leaf, stalked, erect, cylindrical, imbricated with 5, or more spiral rows of small, orbicular, scales. Ovaries sessile, sub-orbicular. Stigma 3 or 4-lobed. Spike of ripe fruit, sub-cylindrical, composed of firmly united 1-seeded drupes. — Female spikes dried form the long pepper of the shops. Root and thickest part of the stems cut into small slices and dried, are much consumed for medical purposes in India under the name of "Pippula Moola." See *Roxb.* l. c. The effects of long pepper are analogous to those of black pepper; some consider it less powerful, others are agreed in its being the more acrid of the two. N. B. Woodville's fig. of P. longum, according to Roxb. answers neither to this nor to P. Chaba, the island Long Pepper.

637. P. Chaba *W. Hunter in As. res.* ix. 391. *Blume in act. bat.* xi. 168. f. 7. *Roxb. fl. ind.* i. 156. *Dietr. sp. pl.* i. 672. — Piper longum *Rumph. amboin.* v. t. 116. f. 1. — Islands of the Indian Archipelago. (Island Long Pepper.)

Stem suffruticose, climbing, rooting. Leaves stalked, ovate or oval-oblong or lanceolate, taper-pointed, unequal at the base, triple or even quintuple ribbed, netted, membranous, smooth. Spikes stalked, the males filiform, the females cylindrical-conical, erect at first, afterwards pendulous. Berries small, globose, reddish, grown together. *Blume.* — Called in Sanscrit *Chavicá* and in Hindi *Chab;* its properties appear to be the same as those of Piper longum.

638. P. sylvaticum *Roxb. fl. ind.* i. 156. — Mountains on the North-west border of Bengal, where it is called Pahari peepul, or Mountain Long pepper.

Root perennial. Branches creeping on the ground, or rooting on trees like Ivy; all the young parts polished. Leaves alternate, petioled, equally-cordate, obtuse, from 5 to 7-nerved, smooth. ♂. Spikes opposite a leaf, short-stalked, slender. Filaments generally 4, oval, fleshy, very short. Anthers 1-celled. ♀. Spikes on a different plant, opposite the leaves, short, stalked, cylindrical. — Used in Bengal both green and ripe as long pepper.

639. P. Amalago *Mill. dict.* No. 3. *Swartz. obs.* 19. — (*Sloane hist.* i. t. 87. f. 1.) — Hilly parts of Jamaica.

Leaves ovate-oblong, acute, equal at the base, 5-nerved, rugose, smooth on each side. Spikes erect, as long as the leaves or nearly so. Fruit black, pungent, size of a mustard seed. — Extremely like black pepper in quality. Should be collected before it is quite ripe. Leaves and young shoots discutient; root in infusion resolutive, sudorific, diaphoretic. See *Lunan hort. jamaic.* i. 51.

640. P. anisatum *HBK. n. g. et sp. pl.* i. 58. — South America on the banks of the Oronoko.

Branches round, striated, smooth. Leaves roundish, ovate, acuminate, deeply cordate, netted, 9-nerved, thin, membranous, with pellucid dots, with appressed hairs on the upper side, downy on the veins beneath, fringed with hairs at the edges. — Leaves and fruit have the smell and taste of Anise; a decoction of the latter used to wash ulcers.

641. P. Siriboa *Linn. sp. pl.* 40. *Blume act. bat.* xi. 208. f. 24. — (*Rumph.* v. t. 117. f. 2. Siriboa) — East Indies; continent and islands.

Stem climbing. Leaves stalked ovate-oblong, acuminate, scarcely unequal somewhat cordate at the base, with from 5 to 7 ribs, reticuated, smooth. Spikes long, pendulous. — Used in the same way as the following species.

642. P. Betle *Linn. sp. pl.* 40. *Roxb. fl. ind.* i. 158. *Bot. mag.* t. 3132. — (*Burm. zeyl.* t. 82. f. 2. *Rheede* vii. t. 15. *Rumph.* v. t. 116. f. 2.) — Cultivated all over India and the Malay countries; also in the West Indies. Once found wild by

Blume in the island of Java, in a marsh between the mountains of Burangrang and Tankuwang Prahu.

Stems shrubby, much branched, running along the ground or climbing to a great height, throwing out roots from the numerous joints. Leaves alternate, distichous, cordate-ovate, oblique at the base, acuminated, 4 to 7 inches long, glabrous, 5 to 7-nerved; nerves connected by transverse veins, the veins and nerves prominent beneath: petioles rounded, grooved on the upper side, while young having a pair of lanceolate stipules, which are deciduous. Spikes opposite the leaves, peduncled, at first shorter than the leaf, slender, cylindrical, tapering, in fruit greatly enlarged, pendent. Scales dense, peltate; stigma sessile divided. The plant is said to be dicœcious. — Leaf chewed by the Malays with lime and slices of the nut of Areca oleracea or the Pinang. It produces intoxicating effects, stimulates powerfully the salivary glands, and digestive organs, and diminishes the perspiration of the skin. A copious account of this by Sir W. Hooker in *Bot. Mag.* l. c.

643. P. methysticum *Forst. prodr. n.* 21. *plant. esc. austr.* 76. — Society, Friendly and Sandwich islands where it is called "Ava."

Leaves cordate, acuminate, many-nerved. Spikes axillary, solitary, very short, pedunculated, spreading. — Rhizoma thick, woody, rugged, aromatic. Used in tincture against chronic rheumatism. Macerated in water it forms an intoxicating beverage, of which the Otaheitans make use to cure venereal affections; they make themselves drunk, after which very copious perspiration comes on; this lasts three days, at the end of which time we are told that the patient is cured.

643 *a*. P. reticulatum *Linn. sp. pl.* 40. *Vahl. enum.* i. 330. *Dietrich sp. pl.* i. 691. — West Indies, and Brazil.

Stem as high as a man, erect. Branches compressed, smooth, with knotty joints. Leaves large, cordate, acuminate, 5–9-nerved, very smooth, reticulated; petioles amplexicaul, half an inch long, channelled above. Peduncles shorter than the petioles. Spikes 5–6 inches long, the thickness of a goose quill. — The roots of this plant, called *Jaborandi* in Brazil (and in a less degree the ripe catkins) are used as stimulants on account of their aromatic pungent qualities. The root is a very powerful sialagogue, and often cures nervous toothach. The leaves bruised are applied with success to the bite of serpents.

644. P. Cubeba *Linn. suppl.* 90. *N. and E. handb.* i. 102. *Blume in act. bat.* xi. 200. f. 21. — Java and Prince of Wales's island.

Stem climbing; branches round, the thickness of a goose-quill, ash-coloured, smooth, rooting at the joints; when very young as well as the petioles minutely downy. Leaves 4–6½ inches long, 1½–2 inches broad, stalked, oblong, or ovate-oblong, acuminate, rounded or obliquely cordate at base, strongly veined, netted, coriaceous, very smooth. Spikes at the end of the branches, opposite the leaves, dicœcious, on peduncles the length of the petioles. Fruit rather longer than black pepper, globose, on pedicels from ⅛ to ¼ inch long. — This is the P. Cubeba of the Linnæan Herbarium, and is readily known from the next by the leaves being coriaceous, smooth, and shining, with the veins proceeding from the side of the midrib, not from its base. Dr. Wallich distributed

specimens from Singapur and Penang under the name of P. pedicellosum, No. 6646. The ripe fruit is called Cubebs in the shops; dried and pounded it is aromatic, pungent, stimulant and purgative, and acts as a specific in arresting gonorrheal discharges. Blume says that the fruits of this, although of good quality, are not sent to Europe: the following species furnishing the officinal Cubebs. I must however remark that I cannot perceive any difference in the flavour of the dried fruit of this species and of the Cubebs sold in the London shops.

645. P. caninum *Rumph.* v. t. 28. f. 2. *Blume act. bat.* xi. 214. f. 26. — P. Cubeba *Roxb. fl. ind.* i. 161. — Java and Prince of Wales's island.

Stem rooting, climbing; the young shoots slightly downy. Leaves 3½–5 inches long, 1½–3 inches wide, ovate or ovate-oblong, sometimes obliquely subcordate at the base, with about 5 ribs, stalked, when young rather downy; the terminal ones occasionally lanceolate, triple-ribbed, membranous, downy beneath. Peduncles about the length of the petioles. Spikes monœcious, from ½ to 2 inches long, curved, and about the thickness of a crow's quill. Fruit red, oval, stalked; the pedicels 2–3 lines long. *Blume.* — It is considered by Dr. Blume probable that the Cubebs of commerce are chiefly furnished by this species, which is quite distinct from P. Cubeba; the fruit is smaller and shorter stalked, having a distinct Anise flavour, and is less pungent than in that species.

646. P. Afzelii. — Sierra Leone. (Guinea Cubebs.)

A plant with the habit of P. Cubeba; but the racemes of fruit are twice as long, and the stalks of the fruit are much longer also. Leaves quite smooth, coriaceous, obovate-lanceolate, acuminate, tapering to the base, which is slightly and obliquely cordate, triple-ribbed, the lateral ribs placed close to the margin and anastomosing with about 3 lateral veins set upon the midrib at an acute angle; petiole short and quite smooth. — This is the plant which has given rise to the statement that Cubebs are obtained from Guinea; asserted by Smith in Rees's Cyclopædia, and repeated by Nees and Ebermaier and others. It is extremely different from either P. Cubeba or caninum, and the quality of its fruit has still to be ascertained.

*** Most writers on Materia medica speak of a kind of Cubebs from the Mauritius or Bourbon, and Dr. Theodore Martius says its fruits are not larger than grains of Millett. Fée refers the Bourbon cubebs to P. caudatum *Vahl;* but that is a Brazilian species.

PEPEROMIA.

Stamens 2. Style simple, very small. Stigma like a dot, or peltate. Fruit baccate, always sessile.

647. P. umbellata *Kunth synops.* i. 124. *Dietrich sp. pl.* i. 142. — Piper umbellatum *Linn. sp. pl.* 43. *HBK. n. g. et. sp.* i. 59. — Various parts of South America.

Stem erect, 3–4 feet high, woody at the base; branches smooth. Leaves very large and rugose, roundish, acute, cordate, membranous,

many-nerved, smooth, with pellucid dots. Petioles and peduncles shaggy. Spikes in umbels, 3-4 together. — The roots of this plant (the *Periparaba*, of Rio de Janeiro and S. Paul's, *Caapeba*, in Minas Geraës) have a distinguished place among the domestic remedies of Brazil. They have been used with great effect in obstructions of the abdominal organs, which, together with general debility, are a frequent consequence of intermitting fevers. They increase the activity of the lymphatic system in particular, produce a speedy effect, and promote all the secretions. The leaves are often prescribed as tea, for swellings of the glands. *Martius travels*, ii. 93.

647 *a.* P. peltata *Dietrich sp. pl.* i. 142. or Piper peltatum *Linn. syst. veg.* 75. The fruit of this plant, called *Caa-peba* or Broad-leaf in Brazil, is used in decoction as a powerful diuretic. *Martius.*

SALICACEÆ.

Nat. syst. ed. 2. p. 186.

SALIX.

Catkins many-flowered, imbricated; composed of a single-flowered, flexible bract. ♂. A small, lateral, abrupt gland, sometimes double. Filaments 1–2–3–5, or more, longer than the bract; in some partly combined. Anthers 2-lobed; opening longitudinally. ♀. A nectariferous gland. Ovary ovate, 1-celled, many-seeded. Style terminal, permanent; stigmas 2, notched and obtuse, or cloven and acute, spreading. Capsule ovate, of 1 cell, with 2 revolute, concave valves. Seeds numerous, minute, oval, tufted with soft, simple, upright hairs.

Willow bark has been found to contain a substance called Salicine, which is an efficacious substitute for sulphate of quinia, as the bark itself, which is an astringent tonic, is for cinchona. It is by no means satisfactorily ascertained what species contain this principle in the greatest abundance. Mr. Pereira believes the best practical rule to follow is to select those willows whose barks are most intensely bitter. I give those species which have been spoken of most favourably.

648. S. Russelliana *Smith. fl. brit.* 1045. *Eng. Bot.* t. 1808. *Eng. Fl.* iv. 186. — Marshy grounds in various parts of Europe.

Branches long, straight and slender, not angular in their insertion like S. fragilis, and the trees, when stripped of their leaves, may always be distinguished by these marks. They are polished, very tough, flexible, round and smooth. Leaves lanceolate, firm, very smooth, except a little silkiness in the bud; their base tapering, not rounded, nor do they at any period approach to the broad ovate form of S. fragilis; they are strongly, and rather coarsely, serrated throughout; the midrib stouter than S. fragilis. Footstalks smooth, channelled, glandular, either along their edges, or about the summit, where they occasionally bear 2 or more small lanceolate leaflets. Stipules half-ovate, toothed or cut, not constantly present. Fertile catkins, more lax and tapering than those of S. fragilis, their common receptacle less downy. Scales oblong, either smooth or hairy, deciduous. Ovary lanceolate, tapering, smooth, on a smooth stalk, at whose base on the inside, is a large, abrupt, solitary, glandular nectary. Style equal in length to the deeply divided stigmas. The ovary protrudes, beyond the scale, nearly half its own length. *Smith.* — Sir James Smith tells us that this is the most valuable officinal species, and that if practitioners have been sometimes disappointed in its use, they probably chanced in such cases to give S. fragilis: an allied but different species which is almost inert.

649. S. fragilis *Linn. sp. pl.* 1443. *Eng. Bot.* t. 1807. is said to yield good bark, but this is denied by Smith as has just been stated. It is however included in some pharmacopœias.

650. S. purpurea *Linn. sp. pl.* 1444. *Eng. Bot.* t. 1388. *Smith Eng. Fl.* iv. 187. — S. monandra *Ehr. arb.* 58. *Fl. Lond.* t. 71. f. 5. S. helix *Linn. sp. pl.* 1444. *Eng. Bot.* t. 1343. *Smith Eng. Fl.* iv. 188. — Low meadows.

A tree of humble growth, about 10 feet high, or a trailing bush smooth in every part; the branches smooth and polished, of a purplish colour, tough and pliable. Leaves as well as catkins, often opposite and alternate upon the same plant; the former lanceolate, pointed, much drawn out, as it were, into a linear shape towards the base; finely serrated, chiefly upwards; their colour, a light, rather glaucous, green, turning blackish in drying. Footstalks short and stout. Stipules none, except on very vigorous shoots, from the roots of trees that have been felled, where they are sometimes of considerable size, half-heart-shaped, wavy and obtuse. Bracts obovate, hairy; their upper half dark brown; those of the females notched. Gland tumid, opposite the bract. Stamen solitary, scarcely longer than the bract. Anthers of 4 lobes, and 4 cells. Ovary silky, ovate; style smooth, full as long as the linear, cloven, not ovate, stigmas. Capsule ovate, silky, light brown, accompanied by the permanent styles, stigmas and blackened scales. — If the medicinal qualities of Willow bark are dependent upon its bitterness, this species, which is the most bitter should furnish the best.

651. S. alba *Linn. sp. pl.* 1449. *Eng. Bot.* t. 2430. *Eng. Fl.* iv. 231. — S. cœrulea *Eng. Bot.* t. 2431. — Moist woods, meadows and pastures.

A tall tree, whose bark is thick, and full of cracks. The branches are numerous, spreading widely, silky when young. Leaves all alternate, on shortish footstalks, lanceolate, broadest a little above the middle, pointed, tapering towards each end, regularly and acutely serrated, the lower serratures most glandular; both sides of a greyish, somewhat glaucous, green, beautifully silky, with close-pressed silvery hairs, very dense and brilliant on the uppermost, or youngest, leaves; the lowermost on each branch, like the bracteas, are smaller, more obtuse, and greener. Stipules variable, either roundish or oblong, small, often wanting. Catkins on short stalks, with 3 or 4 spreading leafy bracteas, for the most part coming before the leaves, but a few more often appear after Midsummer; they are all cylindrical, rather slender, obtuse, near 1½ inch long. Scales fringed, rounded at the end; those of the barren catkins narrower towards the base; of the fertile dilated and convolute in that part. Two obtuse glands, one before, the other behind the stamens. Filaments hairy in their lower part. Anthers roundish, yellow. Ovary very nearly sessile, green, smooth, ovate-lanceolate, bluntish, longer than the scale. Style short. Stigmas short, thickish, cloven. Capsule ovate, brown, smooth, rather small. *Smith.* — According to Smith the bark of this species, although valuable in the treatment of agues, is inferior to that of S. Russelliana. It is nevertheless the kind recommended by Mr. Stone in 1763.

652. S. pentandra *Linn. sp. pl.* 1442. *Eng. Bot.* t. 1805. *Smith Eng. Fl.* iv. 171. — Chiefly in the north of Europe, often in subalpine stations. (Sweet Willow.)

A handsome upright tree, about 15 or 20 feet high, exhaling a fragrant bay-like scent from the resinous notches of its leaves, as well as from the barren catkins. The branches are smooth and shining. Leaves on stout, rather short, footstalks, with very small stipules, or none at all, ovate, with a taper point; their length 2 or 3 inches; breadth 1 inch, or 1½ inch; both sides finely veined, perfectly smooth; the upper of a full, rich, shining green; under paler, and more opaque; their edges finely and copiously crenate throughout, discharging a yellow resin, whence the scent originates. This resin, as Linnæus observes, stains paper between which the leaves are pressed, with rows of permanently yellow dots. About the top of each footstalk, in front, are several glands, likewise resinous. Catkins solitary, at the ends of leafy shoots of the present year, the barren ones large, dense, yellow, with oblong, obtuse, hairy scales, half the length of their 5 or 6, sometimes 8 or 9, filaments, which are more or less densely bearded at the base; the common stalk or receptacle is also hairy. Fertile catkins about the same size, often 2 inches long; their receptacle, and base of the scales, hairy. Ovary smooth, ovate, elongated and contracted in the upper part, much longer than the scales, on a very short stalk; style thick, scarcely so long as the deeply-cloven stigmas. *Smith.* — Nees v. Esenbeck prefers the bark of this to that of any other species; there is an aroma in it which the others want.

653. S. Caprea *Linn. sp. pl.* 1448. *Eng. Bot.* t. 1488, under which name it is probable that all the "Sallows" should be comprehended, is officinal in the Dublin Pharmacopœia, and was contained in that of London for 1824.

POPULUS.

♂. Catkin oblong, cylindrical, loosely imbricated every way, many-flowered. Bract a single-flowered, wedge-shaped, flat scale, unequally jagged at the summit. Calyx turbinate and tubular below; dilated, undivided, and obliquely cup-shaped in the border. Filaments 8, or more, capillary, very short. Anthers drooping, large, quadrangular. ♀. Catkin as in the ♂ but generally shorter. Bract and calyx as in the ♂. Ovary ovate, pointed; style none; stigmas 4 or 8, awl-shaped. Capsule ovate, of 2 concave valves, and 1 cell. Seeds numerous, small, ovate, each crowned with a tuft of fine hairs.

654. P. nigra *Linn. sp. pl.* 1464. *Eng. Bot.* t. 1910. *Smith Eng. Fl.* iv. 245. — Watery places, about the banks of rivers. (Black Poplar.)

A tall umbrageous tree, without suckers. Wood tough and close-grained. Bark thick, blackish, somewhat spongy. Branches smooth; rarely hairy when young. Leaves twice the length of their footstalks, deltoid, or unequally quadrangular, deep green, very smooth, pointed,

serrated; the base more entire, the under side palest. Catkins all long, loose and pendulous, measuring 3 or 4 inches. Bracts of both kinds palmate, hairy, occasionally smooth. Stamens 8, scarcely more with us, though Linnæus and Leers describe 16. Ovary ovate, but slender, closely sheathed at the base only with the regular cup-like calyx. Stigmas 4, awl-shaped, simple, moderately spreading, reddish. *Smith.* — The young leafbuds have a strong aromatic bitter taste, and when fresh crushed are occasionally used in the preparation of an ointment (Unguentum populeum) for tumours, wounds, and burns. They are also employed as the basis of a Balsam and tincture used for colic, headach, &c.

655. P. dilatata *Hort. Kew.* iii. 406 (the Lombardy poplar) is employed like the last.

656. P. balsamifera *Linn. sp. pl.* 1464. *Willd.* iv. 805. — P. Tacamahaca *Mill. dict.* No. 6. — North America, and Siberia. (The Tacamahac Poplar.)

A large tree. Branches smooth, round, deep brown; buds acuminate, smooth, covered in the spring with an abundance of fragrant viscid balsamic juice. Leaves ovate-oblong, quite smooth, with fine glandular serratures, deep green above, almost white, but smooth underneath. Sometimes 2 glands at the apex of the petiole. — The buds are gathered for medicinal purposes; their resinous secretion, collected in shells, is brought to Europe from Canada, and is said to be diuretic and antiscorbutic.

657. P. candicans *Hort. Kew.* iii. 406.
658. P. laurifolia *Ledeb. fl. alt. Pall. fl. ross.* i. t. 41. } have properties like the last.

659. P. tremuloides *Mich. fl. am. sept.* ii. 243. *arb.* t. 8. f. 1. — P. trepida *Willd.* iv. 803. — Swamps of the United States. (American Aspen.)

A tree from 20 to 30 feet high. Leaves roundish ovate, very acute, very slightly tapering into the petiole, without any glands at the base, finely serrated, 3-nerved, distinctly ciliated; petioles compressed, smooth, almost as long as the leaf. — Bark esteemed as a febrifuge in the United States.

BALSAMACEÆ.

Nat. syst. ed. 2. p. 188.

LIQUIDAMBAR.

Catkins of distinct sexes, monœcious, having a common 4-leaved deciduous involucre. ♂. Catkins conical or globose, composed of extremely numerous subsessile anthers. ♀. Catkins globose, composed of small scales, which surround the ovaries, grow together and gradually enlarge. Ovary 2-celled; styles 2, subulate. Capsules oblong, 2-lobed, immersed in sockets formed by the scales, 2-celled, opening at the apex between the styles, many-seeded. Seeds compressed, with a membranous wing, attached to the middle of the dissepiment. *Blume.*

660. L. Altingia *Blume bijdr.* 527. *fl. jav. c. ic.* — Altingia excelsa *Noronha in act. bat.* V. p. 1–20. — Forests of Java at an elevation of from 2000 to 3000 feet above the sea. (Ras-sama-la.)

A gigantic tree. Buds large, ovate, imbricated. Leaves alternate, stalked, ovate-lanceolate, bluntly acuminate, somewhat rounded at the base, coriaceous, smooth, with glandular serratures; stipules subulate, deciduous, with 2 very small teeth or glands at the side, near the apex. Catkins terminal, racemose, globose; the upper 6–8 males, the lower females and fewer. Leaves of the involucre covered with yellowish silky down. — Bark with a hot and bitterish taste, yielding when wounded a fragrant honey-like balsam. The latter is *liquid storax*, a stimulating expectorant substance acting in the same way as solid storax, that is to say influencing the mucous membranes, especially that which lines the air passages. But although this tree undoubtedly produces the fine liquid storax or Rasamala of the Malayan archipelago, it is probable that the principal part of that in use is obtained from L. orientale, for Mr. Pereira ascertained by inspecting the books of a wholesale druggist that all the storax imported for 7 years came from Trieste.

661. L. orientale *Mill. dict.* No. 2. — L. imberbe *Hort. Kew.*, iii. 365. Platanus orientalis *Pocock trav.* ii. 230. t. 89. — Cyprus and other parts of the East of Europe.

A small tree. Leaves bright green, perfectly smooth even at the axils of the veins on the under side, shining above, pallid beneath; palmate, with serrated obscurely 3-lobed divisions. — Dr. Pocock found this tree in Cyprus, where it is called Xylon Effendi (the wood of our Lord); he says it produces an excellent white Turpentine, especially by incisions made in the bark. The common Cypriots toast and suck morsels of the wood and bark, esteeming them a specific remedy in fevers.

662. L. Styraciflua *Linn. sp. pl.* 1418.; a native of the United States, appears, notwithstanding its name, to yield scarcely any storax. Michaux the younger says that he could only succeed in procuring a very small quantity by incision.

SANTALACEÆ.

Nat. syst. ed. 2. p. 193.

SANTALUM.

Calyx urceolate, 5-parted. Stamens 4, opposite the sepals. Sterile stamens 4, alternate with the sepals. Ovary occupying the whole tube of the calyx. Ovules solitary, erect. Drupe with a rim at the apex.

Two species of this genus principally yield the Sandal wood of commerce, a kind of timber much esteemed for its fragrance. "It is made into musical instruments, cabinets and curious boxes, for which it is valued, as no insect can exist, it is said, nor iron rust, within its influence." It is used in Eastern Countries as an incense. White Sandal wood is the young timber, yellow Sandal wood the old. It is here introduced because the native doctors of India consider it sedative and cooling. It is also used by French Apothecaries; its oil is said to be used to adulterate oil of Roses.

663. S. myrtifolium *Spreng. syst.* i. 489. *Decaisne herb. Timor.* 41. — Sirium myrtifolium *Linn. mantiss.* 200. *Roxb. corom.* i. t. 2. Santalum album *Willd. sp. pl.* i. 691. (*Breyn. ic.* 94. t. 5. f. 1.). — Continent of India; Timor.

A small tree. Leaves narrow, oval, hardly ovate, acute at each end, quite smooth, on petioles about $\frac{1}{4}$ their own length. Flowers small, yellow, in stalked, capitate, 3-fid, axillary cymes, shorter than the leaves. A cluster of hairs at the back of each stamen. Ovary $\frac{1}{2}$ superior. — This is the plant with which the Portuguese are reported to drive, or to have driven, a great trade. The Sandal wood of Malabar is from the same species, but is considered of better quality.

664. S. paniculatum *Hooker and Arnott in Beechey's Voyage*, p. 94. — Owhyhee on the Volcano.

A small tree. Leaves oblong, obtuse, acute at base, quite smooth and shining on the upper side, covered with an excessively short nap on the under, and apparently glaucous. Flowers in panicled axillary cymes as long as the leaves; branches covered with a fine down. Calyx glaucous. Stamens with a tuft of hairs at the back. Ovary superior just at the point. — This is unquestionably the Sandal wood of Owhyhee, as was ascertained by the late Mr. Macrae, from whose collection I have specimens.

665. S. Freycinetianum *Gaudich.* is also said to produce Sandal wood in the Sandwich islands.

THYMELACEÆ.

Nat. syst. ed. 2. *p.* 194.

DAPHNE.

Calyx tubular, withering; tube cylindrical, coriaceous, longer than the limb, imperforate at the base, containing the stamens; limb in 4 deep, ovate, spreading, coloured segments. Filaments short. in 2 rows, from about the middle of the tube; anthers roundish-oblong, of 2 cells, simple, enclosed within the tube. Ovary ovate; style short, terminal; stigma capitate, depressed, entire. Berry oval, of 1 cell. Seed solitary, suspended, oval, large, with a thin brittle skin.

666. D. Mezereum *Linn. sp. pl.* 509. *Eng. Bot.* t. 1381. *Woodv.* t. 23. *Smith Eng. Fl.* ii. 228. *Fl. Dan.* t. 268. — In woods in various parts of Europe, especially in the central countries. (Mezereum.)

Stem bushy, 4 or 5 feet high, with upright, alternate, smooth, tough and pliant branches; leafy while young. Leaves scattered, stalked, lanceolate, smooth, 2 inches long, appearing after the flowers, and soon accompanied by flower-buds for the next season. Flowers highly, and to many persons too powerfully, fragrant, seated in little tufts on the naked branches, with several brown, smooth, ovate bracteas underneath. Calyx like a corolla in texture, crimson all over; the tube externally hairy. Berries scarlet. *Smith.* — In Germany the bark of the stem and larger branches is removed in spring, folded in small bundles, and dried for medicinal use. In this country the bark of the root is employed. Its taste is at first sweetish, but afterwards highly acrid. All the parts are excessively acrid, and act as a local irritant poison. Voigt says that it vomits and purges and affects the urinary organs, and that death takes place from its local operation. As a local irritant, Mezereum bark is employed in France, under the name of *Garou*, to produce vesication. In this country it is frequently employed as a topical remedy for toothach. Dr. Withering cured a case of difficulty of swallowing, by Mezereum, which he directed to be chewed frequently. It has been recommended internally in venereal complaints, but it appears not to have any influence over such maladies. Dr. Cullen says he has employed it with success in some cutaneous diseases. *Pereira.*

667. D. Laureola *Linn sp. pl.* 510. *Eng. Bot.* t. 119. *Jacq. Fl. austr.* t. 183. *Smith Eng. Fl.* ii. 229. — Woods of all Europe, as far south as Sicily. (Spurge Laurel.)

Whole plant very smooth. Stem 2 or 3 feet high, with round, pale brown, upright, tough and pliant branches, crowned with tufts of evergreen leaves, elegantly drooping in all directions, and about 2 or 3 inches long, on short footstalks. Flowers deep green, with orange

anthers, 4 of which are just visible in the throat of the calyx. Their scent, resembling saffron, with an overpowering sweetness, is perceptible in an evening only, and has been observed by very few people. An oval, concave bract accompanies each short partial stalk, at the base. Berry oval, black. — Every part is very acrid, producing like the Mezereum, a burning heat in the mouth and throat. *Smith.*

668. D. Gnidium *Linn. sp. pl.* 511. *Fl. græc.* t. 356. — Hills and barren plains in the southern parts of Europe.

A small bush. Leaves linear-lanceolate, clustered, acuminate, cuspidate, quite smooth. Flowers numerous, small, white, with a fragrant smell, in terminal panicled racemes. — Properties like those of Mezereum.

LAGETTA.

Flowers diœcious. Calyx coloured, tubular, quadrifid. Eight setaceous linear scales in the bottom of the calyx. Stamens 8, attached in 2 rows to the tube of the calyx; filaments very short. Style simple; stigmas 2, capitate. Drupe dry, surrounded by the permanent calyx.

669. L. lintearia *Lam. enc.* iii. 363. t. 289. — Daphne Lagetto *Swartz. fl. ind. occ.* ii. 680. (*Browne jam.* t. 31. f. 5. *Sloane* ii. 22. t. 168. f. 1–3. 169. f. 1.) — High mountains of Jamaica, St. Domingo, Mexico. (Lace Bark.)

A tree 30 feet high. Leaves alternate, stalked, ovate, or somewhat cordate, acute or acuminate, evergreen, smooth and shining. Calyx white, ventricose, coriaceous, filled with white wool, with a small 4-parted limb. Flowers in smooth, terminal, panicled racemes. — The bark possesses properties similar to that of Mezereum; and is used for the same medical purposes. It is remarkable for separating readily into a great number of thin white layers, which being stretched laterally assume the appearance of the finest lace work. It may even be washed with soap like linen.

DIRCA.

Calyx campanulate, with an obsolete unequal limb. Filaments 8, capillary, projecting, inserted into the middle of the tube; alternately longer. Style incurved at the apex.

670. D. palustris *Linn. amœn. ac.* iii. 12. t. 1. f. 7. *Bigelow med. bot.* ii. t. 37. *Duham. arb.* i. t. 212. — A marshy shrub, frequenting low woods in North America, bearing the severest cold and the greatest heat of the different parts of the Union.

An irregular shrub, with a tendency to a horizontal direction in its branches. The branches interrupted or jointed. Leaves alternate, with very short petioles, oval, entire, rather acute, downy when young, smooth and membranous when fully grown, and pale on the under side. The flowers appear long before the leaves. When young they are enclosed within a small hairy bud, occupying a sheath or cavity in the

end of each flowering branch, usually in bunches of 3 together, with their peduncles cohering. Calyx yellow, funnel-shaped, ½ an inch long, with a contraction near the base and another in the middle, its border dilated, and slightly and irregularly toothed. Stamens 8, much longer than the calyx. Ovary ovate, placed obliquely, the style appearing to issue from one side; style capillary, curved, and longer than the stamens. Fruit a small oval, acute, red, 1-seeded berry.—Bark acrid; in the dose of 6 or 8 grains it produces heat in the stomach and brings on vomiting, especially when fresh. It sometimes acts also as a cathartic. The bark is a vesicatory in a very slow degree; the fruit is narcotic, producing effects like those of Stramonium. *Bigelow.*

HERNANDIACEÆ.

Nat. syst. ed. 2. *p.* 195.

HERNANDIA.

Flowers monœcious. ♂. Calyx petaloid, 6-parted, with the segments in 2 rows. Glands (sterile stamens) 6, stipitate, placed around 3 stamens united at the base. Filaments short, erect; anthers opening laterally. ♀. Calyx double; exterior inferior, short, urceolate; interior petaloid, contracted above the ovary, more than 8-parted, deciduous. Sterile filaments 4, gland-shaped, arising from the bottom of the segments of the calyx. Style included; stigma broad, funnel-shaped. Ovary with a single pendulous ovule. Fruit (according to Gærtner) drupaceous, clothed with the inflated calyx, 8-furrowed, fungous internally, with a 1-seeded kernel. Embryo without albumen, inverted, with large lobed cotyledons.

671. H. sonora *Linn. hort. cliff.* 485. t. 23. *Jacq. amer.* 245. —(*Pluk. alm.* t. 208. f. 1.).—Various parts of both East and West Indies.

A tall erect tree. Leaves cordate, peltate, smooth. Flowers yellowish, panicled. Fruit a dry, ovate, obtuse drupe, with 8 furrows and an umbilicus. Calyx very large, inflated, roundish, depressed, succulent, coriaceous, shining, coloured, with a small roundish entire mouth. —The bark, seed, and young leaves are all slightly purgative. Rumph says that the fibrous roots chewed and applied to wounds caused by the Macassar poison, form an effectual cure. The juice of the leaves is a powerful depilatory; it destroys hair, wherever it is applied, without pain.

AQUILARIACEÆ.

Nat. syst. ed. 2. *p.* 196.

AQUILARIA.

Calyx urceolate, 5-toothed; teeth reflexed. Ten hairy scales closing up the orifice of the calyx. Anthers 10, sessile, alternate with the scales, and inserted at their base. Stigma capitate; ovary half 2-celled, with a single suspended ovule in each cell. Capsule 2-valved, 2-seeded.

672. A. Agallocha *Roxb. fl. ind.* ii. 422. *Royle illustr.* t. 36. f. 1. — Forests of Sylhet; Molucca; Cochin-china.

An immense tree, perfectly free from hairs excepting on the young leaves, twigs and flowers. Leaves alternate, subsessile, oval, acuminate, glossy, with fine, numerous, parallel veins, running in a gentle curve from the midrib to the margin, very much in the way of an endogen; stipules 0. Flowers small, in compact, simple, terminal and axillary clusters. Fruit obovate, mucronate, reddish brown, 2-valved. — This both Roxburgh and Professor Royle consider the true Calambac, Agallochum, Lign-Aloes, or Aloes wood of oriental writers; a fragrant substance contained in the interior of the trunk. It is regarded as a cordial by some Asiatic nations, and has been prescribed in Europe in gout and rheumatism. *Ainslie.*

LAURACEÆ.*

Nat. syst. ed. 2. p. 200.

CINNAMOMUM.

Flowers hermaphrodite or polygamous, panicled or fascicled, naked. Calyx 6-cleft; with the limb deciduous. Fertile stamens 9, in 3 rows; the 3 inner with 2 sessile glands at the base; anthers 4-celled, the 3 inner turned outwards. Three capitate abortive stamens next the centre. Fruit seated in a cup-like calyx. — Leaves ribbed. Leaf buds not scaly.

*** No question was ever more vexed with doubts and difficulties than that which relates to the trees producing the different kinds of Cinnamon. I follow the elaborate paper of Dr. Blume, as being the newest as well as the most complete account of these trees, so far as he has examined them.

673. C. zeylanicum *Nees Laur.* 45. *Nees and Eberm. handb.* ii. 420. — Laurus Cinnamomum *Linn. sp. pl.* 528. L. Cassia *Bot. Mag.* t. 1636. C. nitidum *Nees laurin.* 43. not Hooker. — Ceylon, Java; cultivated in many parts of both the new and old world.

Branches somewhat 4-cornered, smooth. Leaves ovate or ovate-oblong, tapering into an obtuse point, triple-nerved or 3-nerved, reticulated on the under side, smooth, the uppermost the smallest. Panicles terminal and axillary, stalked. Flowers hoary and silky; segments oblong, deciduous in the middle. — This is the true Ceylon Cinnamon, furnishing bark of the best quality. It varies, however, according to the season of the year when it is collected. It is the plant usually called Laurus Cassia in the gardens, where also it is sometimes found under the name of Laurus Cinnamomum and Cinnamomum aromaticum.

674. C. zeylanicum, *var.* Cassia *Nees Laurin.* 47. — Laurus Cassia *Linn. syst. nat. ed. Hall. a.* 1760. p. 1010. Cassia lignea *Blackw. herb.* t. 391. — Apparently naturalised on the continent of India.

Leaves oblong or elliptical much tapering to the point, acute at the base; otherwise the same as C. zeylanicum. — Nees v. Esenbeck regards this, the plant that produces the Cassia lignea, as a degenerate variety of C. zeylanicum, palmed off upon foreigners as true Cinnamon by the Dutch when they held Ceylon, and thus carried to the continent of India, where it has naturalised itself.

* The characters of almost all the plants of this order are taken from the excellent *Systema Laurinarum* of the President C. G. Nees von Esenbeck.

675. C. aromaticum *Nees Laurin.* 52. — C. Cassia *Nees and Eberm. pl. med.* t. 129. *handb.* ii. 424. Laurus Cassia *Hort. Kew.* ii. 427. Laurus Cinnamomum *Bot. Repos.* t. 595. — China.

Branches angular, and petioles covered with broken downiness. Leaves oblong, rather acute at each end, triple-nerved, the nerves vanishing at the point of the leaf; with curved veinlets on the under side. Panicles narrow, silky. — According to Nees v. Esenbeck this is the plant which furnishes the valuable Chinese Cinnamon. The agreeable but powerfully aromatic flavour and odour of the bark does not however seem to exist also in the leaves; for they, in the stoves of Europe at least, are almost insipid, mucilaginous and somewhat astringent, with no taste of either Cinnamon or Cloves. *Nees.* Cassia bark is supposed by some to come from this, but Mr. Marshall asserts that it is only a coarse Cinnamon obtained from the thick roots or large branches of the Cinnamon Tree.

676. C. Tamala *Fr. Nees and Eberm. handb.* ii. 426. *Nees Laurin.* 56. — Tai, Tadsch or Tedsch *Bengal.* — Continent of India; wild in Derwanee and Gongachora; cultivated in the gardens of Rungpur.

Branches nearly round, the younger rough with downiness. Leaves oblong-lanceolate, acuminate, acute at the base, smooth, triple-nerved, the midrib without any lateral veins at the apex. Panicle somewhat terminal and axillary, stalked, divaricating. Calyx campanulate; segments obovate, rather sharp pointed, hoary and silky on each side, deciduous below the middle. — Taste of the dried leaves warm, aromatic, at first like Cinnamon, afterwards like Cloves mixed with Camphor. These leaves are sold under the name of "Folia Malabathri, Tamalapathri, or Indi," in the shops, according to Nees ab Esenbeck; but Blume says he never found this in any samples he examined, although the latter are always mixed up of various species.

677. C. Loureirii *Nees Laurin.* 65. — Laurus Cinnamomum *Lour. fl. cochin.* i. 305. Ni-Kei *Japan.* Kio Kui *Chinese.* — The lofty mountains of Cochin-china, to the west towards Laos; Japan.

Branches compressed-quadrangular, smooth. Leaves somewhat oval, tapering to both ends, acuminate or blunted, most minutely scaly on the under side, triple-nerved, the midrib having lateral veins below the apex. — The *Flowers of Cassia* are produced by this species. According to Loureiro the old and young branches are equally worthless; but the middle sized shoots furnish a bark about a line thick, of the best quality, superior to that of Ceylon, and sold at a much higher price.

678. C. Kiamis *Nees in Wall. pl. as. rar.* ii. p. 75. *laurin.* 67. — C. Burmanni *Blume bijdr.* 569. *Nees and Eberm. handb.* ii. 424; is said to produce one of the sorts of *Massoy bark;* but according to Blume that article is not furnished by any species of Cinnamon.

679. C. Culilawan *Blume bijdr.* p. 571. *Rumphia* p. 26. t. 9. f. 1. and t. 10. f. 1. *Tydsch. nat. gesch.* i. 62. not Nees v. E. — Laurus Culilawan *Linn. sp.* 530. L. Culilawang *N. v. E. disp. de cinn.* p. 61. excl. descr. pl. jav. — Amboyna, especially in Leitimor near the villages of Saya, Rutton and Ema; probably in other

parts of the Moluccas as well; not found in Java, or the Papuan islands. *Blume.*

Bark when rubbed aromatic, like cloves, but less pungent and sweeter, when chewed rather bitter and mucous. Leaves ovate or lanceolate-oblong, finely acuminate, rather acute at the base, smooth, obscurely netted underneath, with the lateral nerves vanishing at the point. Racemes compound, or rather cymes trichotomous, terminal or axillary, few-flowered. Segments of the calyx deciduous below the apex. *Bl.* — This is the tree that yields the true Culilawan bark of which Dr. Blume has given a medical account in the "*Tydschrift voor natuurlijke Geschiedenis van J. Van der Hoeven, en W. H. De Vriese, Amst.* 1834. p. 46." This learned Botanist speaks of the "egregiæ hujus remedii virtutes in quibusdam morbis sanandis." For the following memorandum concerning it I am indebted to Mr. Pereira:— "Culilawan bark is an aromatic stimulant like Cassia, with some astringency and a flavour of cloves. It owes its medicinal activity to a combination of volatile oil, resin, and bitter extractive. It is useful, as a carminative and stomachic, in dyspeptic complaints, especially when given in combination with the bitter tonics. It has been used in atonic gout, in old diarrhœas, &c. The dose of it in substance is from 10 grains to ½ a drachm. The tincture of the Wirtemberg Pharmacopœia is prepared by digesting 4 ounces of bark in 1½ pint of spirit: the dose is 1 or 2 fluid drachms. The oil prepared by distillation may be used as the oils of cloves, cassia, &c. — The natives of Amboyna employ it internally in paralysis of the bladder, and externally as a stimulating liniment in contusions, paralysis, and arthritic complaints." It appears, from the investigations of Blume, that the Culilawan bark of the shops consists of a mixture of several Indian Barks, especially those of C. Sintoc javanicum and xanthoneurum; a confusion of no great importance however, since "tales cortices inter se quam maximè sint similes et magis etiam virtutibus medicis congruant."

680. C. rubrum *Blume Rumphia* xxix. t. 11. f. 1. — Laurus Caryophyllus *Lour. cochinch.* i. 308. ? — Along with the last, and probably also in Cochin-china.

A middle sized tree. Leaves oblong or lanceolate, very long-pointed, acute at the base, 3-nerved or shortly triple-nerved, smooth, with the nerves running nearly through to the point. Racemes compound, or rather cymes trichotomous, terminal or axillary, few-flowered. Segments of the calyx permanent in the fruit. *Bl.* — Bark similar to that of C. Culilawan, and hardly inferior. Loureiro says it contains much more essential oil than that of Cinnamon, and smells of cloves, but is not so agreeable.

681. C. Sintoc *Blume bijdr.* 571. *Rumphia* xxx. t. xii. *N. ab E. laurin.* 61. — Nilgherry Mountains; higher mountains of Java.

A tree 80 feet high. Leaves ovate or lanceolate-oblong, bluntly acuminate, (those next the flowers ovate and obtuse), scarcely acute at the base, triple-nerved, smooth, obscurely netted beneath; the lateral nerves often bifid at the base, and vanishing towards the point. Panicle or compound cyme terminal, spreading, covered with a brown velvety nap. Segments of the calyx deciduous at the base. — The bark is in quality very like that of the true Culilawan, aromatic in the same degree, but less agreeable, and with a more bitter after-taste; it is

also drier and more powdery when chewed. The smell moreover is less agreeable, not so purely that of cloves, but with a strong odour of nutmegs.

682. C. xanthoneuron *Blume Rumphia* xxxiii. t. 13. f. 1. — Papuan islands, and Moluccas.

A tree. Leaves oblong or oblong-lanceolate, bluntly acuminate, acute at the base, shortly triple-nerved, netted and hoary underneath; nerves above their middle furnished with branching veins. — A kind of Culilawan bark of great fragrance, clove-scented, and more pungent than the true sort, when fresh, but losing its quality by time. It is so extremely like Massoy bark, as to be confounded with it, although the latter is not the produce of any Cinnamon, according to Blume.

683. C. nitidum *Hook. exot. fl.* t. 176. *Blume Rumphia* xxxv. t. 15. — Laurus malabathrica *Roxb. hort. Calc.* p. 30. Cinnamomum eucalyptoides *Nees in Wall. pl. as.* ii. p. 73. — Continent of India; Ceylon; Java.

A shrub, or small tree. Leaves elliptical or elliptical-oblong, tapering a little to each end, usually withering at the point, shortly triple-nerved, nearly veinless, smooth; the nerves running nearly through to the point. Racemes, or rather a terminal compound cyme, branched, panicled, subterminal, about as long as the leaves. Flowers silky. Segments of the calyx deciduous in the middle. *Blume.* — This is the plant which furnished the principal part of the "Folia Malabathri" of the old pharmacologists, a mixture of the leaves of several species of Cinnamon, and once used as an aromatic substitute for Cinnamon.

684. C. javanicum *Blume bijdr.* p. 570. *Rumphia* p. 42. t. 19. — Laurus Malabathrum *Horsfield in act. bat.* viii. — Java and Borneo.

A tree with a trunk 20–30 feet high. Leaves unusually large, elliptical-oblong, acuminate, obtuse at the base, 3- or shortly triple-nerved, transversely netted; the nerves confluent at the apex, on the under side densely downy, as well as the petioles, branches, and spreading terminal panicle. *Blume.* — Bark a deep cinnamon brown, more bitter than Culilawan bark; and the leaves when rubbed have a very sharp aromatic odour. Blume says the bark deserves the serious attention of medical men, on account of its powerful effects in spasmodic colic, and the after-pains attending parturition.

CAMPHORA.

Flowers hermaphrodite, panicled, naked. Calyx 6-cleft, papery, with a deciduous limb. Fertile stamens 9, in 3 rows; the inner with 2, stalked compressed glands at the base; anthers 4-celled; the outer turned inwards, the inner outwards. Three sterile stamens shaped like the first, placed in a whorl alternating with the stamens of the second row; 3 others stalked, with an ovate glandular head. Fruit placed on the obconical base of the calyx. — Leaves triple-nerved, glandular in the axils of the principal veins. Leaf buds scaly.

685. C. officinarum *Nees Laurin.* 88. — Cinnamomum Camphora *Nees and Eberm. handb.* ii. 430. *pl. med.* 127. Laurus Camphora *Linn. Mat. med.* p. 107. Laurus camphorifera *Kœmpf. amœn.* p. 770. t. 771. — Japan, and China; cultivated in most of the warm parts of the world.

A tree with lax smooth branches. Leaves somewhat coriaceous, bright green and shining above, paler beneath; with a sunken gland at the axils of the principal veins, projecting at the upper side, opening by an oval pore beneath. Petioles from 1 inch to 1½ inch long, slender, smooth. Panicles axillary and terminal, corymbose, naked. Flowers smooth on the outside. — Chinese Camphor is obtained from the wood, branches and leaves, by means of dry distillation. It is a kind of Stearoptine remaining after the Elæoptene or æthereal oil of the live tree is evaporated. (*Nees.*) The Camphor of commerce is chiefly produced in the island of Formosa, and brought by the Chinchew junks in very large quantities to Canton, whence foreign markets are supplied. *Reeves in Med. bot. trans.* 1828. p. 26.

PERSEA.

Hermaphrodite; a few flowers unisexual. Calyx deeply 6-parted, perishing down to the base. Fertile stamens 9, in 3 rows; the 3 inner with 2 globose glands at the base; filaments filiform, villous; anthers oblong, 4-celled, the 6 outer turned inwards, the inner turned outwards. Sterile stamens 3, with a distinct cordate, triangular head. Fruit placed on a pedicel more or less thickened and fleshy. — Flowers panicled. Leafbuds 2-valved, compressed. Leaves ribbed, with pinnate veins.

686. P. gratissima *Gærtn. de fr. et sem.* iii. p. 222. *Nees Laurin.* 128. — Laurus Persea *Linn. sp. pl.* 529. *Sloane Jam.* ii. 132. t. 222. f. 2. — The tropical parts of America. (Avocado Pear.)

A large tree. Leaves ovate, ovate-oblong or obovate, rather acute at each end, reticulated, and downy beneath, 9-veined, glaucous. Calyx with nearly equal oblong segments, in downy panicles, 3 or 4 inches long. Fruit about as large as a pear, at first surrounded at the base by the permanent calyx, but when ripe placed on a thick succulent peduncle. — The fruit abounds in a fixed oil of a buttery substance, and is much esteemed as a dessert fruit in the West Indies. The leaves are reckoned balsamic, pectoral and vulnerary. The seeds are very astringent.

N. B. If there is such a plant as Laurus caustica, it probably belongs to this genus; as Nees v. Esenbeck suggests. But I suspect it is nothing but the tree "Lithri," or Lithrea caustica.

CARYODAPHNE.

Flowers hermaphrodite, corymbose-panicled. Calyx funnel-

shaped, with an obconical equal deciduous* tube. Fertile stamens 9, in 3 rows, the 3 inner furnished with a distinct stalked gland on each side. Anthers oblong, glandular at the point, 2-celled, the 6 outer looking inwards, the 3 inner outwards. Sterile stamens 3, stalked, with a long sharp head, belonging to the inner whorl. Stigma discoidal; ovary immersed in the tube of the calyx. Caryopsis covered by the lobeless closed tube of the calyx, and united to it. Leaf buds with a few coriaceous keeled scales. Leaves 3-nerved, or 3-plenerved.

687. C. densiflora *Blume in Nees Laurin.* 228. — Kiteja or Kitedja *Javanese.* — Woods from 1400 to 1800 feet above the sea on the West of Java.

A tree 60–80 feet high. Young branches round, smooth, very dark green; at first covered with a short ochre-coloured downiness. Leaves 3-nerved or triple-nerved, elliptical-oblong, bluntly cuspidate, smooth, glaucous beneath. Panicles corymbose, axillary, dense. Fruit globose, furrowed on the summit. — Bark brownish, tonic, containing a great quantity of bitter somewhat balsamic extractive matter. Leaves gratefully aromatic; they are used in infusion, like tea, against spasms of the bowels, and the convulsive affections of pregnant women. *Blume.*

MESPILODAPHNE.

Diœcious? Calyx 6-cleft; tube obconical, segments equal, permanent. Fertile stamens 9, in 3 rows, the 3 inner with 2 sessile globose glands at the base. Anthers 4-celled; the 6 outer ovate and looking inwards, the 3 inner narrower and looking outwards. Sterile stamens in 1 species forming a fourth row, with a distinct stalk and a cordate-lanceolate head. Stigma depressed, capitate. Fruit succulent, enclosed from the first in the thick corky fleshy tube of the calyx, and covered over by its converging segments; eventually exposed at the point by the falling or rubbing off of the segments. — Flowers panicled.

688. M. pretiosa *Nees Laurin.* 237. — Laurus Quixos *Lam. enc.* iii. 455. — Woods near Parà; Maypure. Páo or Casca pretiosa *Portuguese.*

A tree. Branches smooth, when young angular; their bark when old split lengthwise and cracked across till it looks as if tessellated. Leaves from 5–7 inches long, 1½–2 inches broad, oblong, tapering into an obtuse point, acute at the base, smooth, papery, shining, with pinnated veins. Flowers and flower-stalks all smooth. Ripe fruit small, marked at the vertex by a circular scar denoting the place from which the limb of the calyx fell; very much like a small fig. — Inner bark and the rind of the calyx of a most sweet odour and agreeable taste, resembling Cinnamon mixed with Orange-flowers, or oil of Bergamot.

* Nees v. Esenbeck states the character thus "tubo obconico æquali deciduo;" but I cannot reconcile it with the tube of the calyx eventually enclosing the fruit.

AYDENDRON.

Flowers hermaphrodite, panicled. Calyx funnel-shaped, 6-cleft; segments of the limb unequal deciduous. Fertile stamens 9, in 3 rows; filaments thick, short, hairy; anthers 6-celled, the outer broader and very short, with pores below their apex and directed inwards, the interior smaller facing outwards, with their pores more at the side. Glands in pairs, sessile, compressed. Sterile stamens in a fourth row, compressed, subulate, obtuse, sessile, scale-like. Ovary tapered into a short style; stigma truncated narrow. Fruit at first covered over by the calyx; eventually only surrounded by it at the base in the form of a cup, acorn-like. — Panicles before expansion covered by deciduous scale-like bracts.

689. A. Cujumary *Nees Laur.* 247.—Ocotea Cujumary *Martius in Buchn. repert. a.* 1830. xxxv. 178. *Féruss. Bull.* 1831. *Jan.* p. 63. — Woods of Brazil especially in the province of Rio Negro.

Leaves oblong, acuminate, shining on the upper side, finely downy on the under side. Panicles of fruit very stiff. Cups warted, truncated, with 2 furrows at the edge. — Seeds aromatic. Their oily cotyledons are employed in powder mixed with wine or water, in cases of indigestion.

690. A. Laurel *Nees Laurin.* 249. — Ocotea Pichurim *Humb. Bonpl. and Kunth. n. g. and sp. pl.* ii. 166. — Marshy grounds near Caño de Berita by Calobozo in the province of Venezuela, where it is called "Laurel."

Leaves oblong-lanceolate or lanceolate, taper-pointed, with very fine down underneath. Racemes of fruit axillary, twice as short as the leaves. Cups truncated, with a simple sharp margin. Fruit about the size of an olive, seated in the cup. — Seeds similar in quantity to those of the last species. Humboldt inquires whether this may not be the plant which produces the Pichurim or Puchury Beans, once celebrated for their febrifugal power; and it appears that both the species here mentioned possess similar properties. But Frederick Nees v. Esenbeck asserts positively, from an inspection of a specimen of Ocotea Pichurim sent him by Kunth, that it is by no means the origin of these Beans (*Handb.* ii. 436.), which he suspects are rather the produce of some Lauraceous plant of the genus Sassafras. His brother refers them to Nectandra Puchury, which see. These Beans were imported from Brazil into Stockholm in the middle of the last century, and were found a valuable tonic and astringent medicine; during the continental war they were used as a bad substitute for nutmegs. They are now obsolete.

NECTANDRA.

Hermaphrodite. Calyx 6-parted, rotate; segments deciduous, the 3 outer rather the broadest. Anthers 9, ovate, nearly sessile, with 4 cells arranged in a curve, and distinct from the tip of the anther; cells of the interior anthers inverted. Glands in pairs, globose, sessile, at the base of the 3 interior stamens next their back. Sterile stamens either tooth-shaped and biglandular at the base, or eglandular and then with a small oval head. Fruit succulent, more or less immersed in the tube of the calyx changed into a truncated cup. — Flowers panicled or corymbose, axillary, lax, pretty ample.

691. N. cymbarum *Nees Laurin.* 305. — Ocotea cymbarum *HBK. n. g. et. sp. pl.* ii. 166. Ocotea amara *Mart. in. Buchn. Repert.* 1830. xxxv. 180. *Féruss. bull.* 1831. *Jan.* p. 63. — Woods of the Oronoko near S. Fernando de Atabapo, where it is called "Sassafras;" in the ancient forests of the Rio Negro in Brazil.

A tree 100 feet high. Branches and all the parts smooth. Leaves oblong-lanceolate, papery, shining above, they and the peduncles of the fruit, which are short at the base of the branches and new shoots, quite smooth. Cup large, with a double edge. — Bark aromatic, bitter, stomachic. Martius suspects that it is one of the ingredients in the famous *Woorary* poison of Guiana.

692. N. Cinnamomoides *Nees Laurin.* 307. — Laurus Cinnamomoides *HBK. n. g. et. sp. pl.* ii. 169. Cinnamomum sylvestre americanum *Seba Thesaur.* ii. p. 90. t. 84. f. 6. — Temperate shady country of New Grenada, where it is called "Canela;" cultivated about Mariquita.

Leaves oblong tapering into a fine point, acute at the base, between papery and leathery, naked, smooth and shining above, finely downy beneath, with numerous distinct narrow costal veins. — Bark with the flavour and smell of cinnamon, as which it is used in New Grenada.

693. N. Puchurymajor *Nees Laurin.* 328. — Ocotea Puchury major *Martius in Buchn. repert.* 1830. xxxv. 171. *Féruss. bull.* 1831. *Jan.* p. 62. Puchury, Puchery, Puchyry of the *Brazilians.* — Woods of Tabatinga in the province of Rio Negro in Brazil.

Leaves oblong or elliptical, tapering to a narrow point, between papery and leathery, smooth, reticulated, of the same colour on both sides. Peduncles axillary short. Cup of the fruit very large and spongy. — Martius assigns the Pichurim beans to this plant (see Aydendron Laurel). The fruit, in the early months of the year drop from their cups to the ground, when they are collected by the natives, cleaned of their flesh and pericarp and dried by a gentle heat. They are used in dysentery, diarrhœa, cardialgia, spasmodic colic, strangury, incontinence of urine and other disorders. The bark has the smell of

fennel mixed with cloves according to Nees, of camphor according to Martius; its taste is aromatic, not hot.

N. B. Another species, the Nectandra Puchury minor of Nees, is said also to yield seeds having similar qualities; its bark is described as resembling Sassafras when fresh, but tasteless and scentless when dry. The cotyledons smell like Balsam of Peru. It yields the Sassafras nuts of the London shops according to Humboldt.

DICYPELLIUM.

Dicœcious. Calyx deeply 6-parted, spread out, with equal permanent segments. ♂ unknown. ♀; sterile stamens in 3 rows; the 3 outer perfectly petaloid; the 3 next petaloideo-unguiculate, inflexed at the point, with 4 pits below the point; the 3 inner compressed, sessile, truncate, with 2 pits on each side below the point and 2 glandular protuberances at the back. Fruit dry, seated in the enlarged, fleshy, shrivelled calyx, and among the enlarged hardened sterile stamens. — Inflorescence simple few-flowered racemes.

694. D. caryophyllatum *Nees Laur.* 344. — Persea caryophyllacea *Martius in Nees and Eberm. handb.* ii. 435. Licaria guianensis *Aubl. guian.* i. 313. t. 121. Bois de Rose *French settlers in Cayenne;* Licari Kanali *Caribs.* — Woods of Brazil, Guiana.

A tree. Leaves alternate, oblong, tapered to a very fine point which is nevertheless bluntish, acute at base, papery, smooth, netted on the under side. Racemes 1 or 2 together at the base of a terminal bud, from 1 to 1½ inch long, their peduncle included, 3–6-flowered. Fruit drupaceous, ovate, depressed at the apex and plaited in a stellate manner. — Bark smelling of cloves, with a hot clove-like peppery taste, and powerful tonic properties. Nees v. Esenbeck inquires whether this may not be the "Linharea aromatica, Canella do Mato, *Arruda in Koster's travels*, p. 493?"

OREODAPHNE.

Hermaphrodite. Dicœcious or polygamous. Calyx 6-parted or 6-cleft, nearly equal; the limb eventually disappearing. Stamens 9; anthers oblong, with narrow filaments, 4-celled, the 3 inner looking outwards. Sterile stamens in a fourth row, none, or subulate, or incomplete. Fruit succulent, more or less immersed in a deep thick cup, formed out of the altered tube of the calyx. — Flowers panicled or racemose, axillary, occasionally umbellulate.

695. O. opifera *Nees Laurin.* 390. — Ocotea opifera *Mart. in Buchn. repert.* 1830. xxxv. 179. *Feruss. bull.* 1831. *Jan.* p. 63. — Woods of Para, and the Rio negro.

Leaves oblong, cuspidate, tapering into the petiole, silky on the

under side. Panicles compact, divaricating, silky. Fruit oval. — The fruit yields upon distillation a limpid volatile oil of a yellow wine-colour, an aromatic acrid taste, and smell as if old oil of Orange peel had been mixed with oil of Rosemary. Used in Brazil in contractions of the joints, pains in the limbs and similar cases.

696. O. cupularis *Nees Laurin.* 438. — Laurus cupularis *Lam. enc.* iii. 447. *ill. gen.* t. 321. Bois de Canelle *Aubl. guian.* i. p. 363. and 364. — Woods of the Isles of France, Bourbon, and Madagascar.

A very large tree, with a strong scented wood. Leaves ovate-elliptical, acute at each end (sometimes blunt at the apex), ending in a channelled stalk, obsoletely netted, smooth; the axils of the costal veins without pores. Racemes in clustered few-flowered rough hoary racemes below the axillary and terminal bud. Calyx of fruit nearly globose. — This is the Cinnamon of the Isle of France.

SASSAFRAS.

Dicœcious. Calyx 6-parted, membranous; segments equal, permanent at the base. ♂. Fertile stamens 9, in 3 rows, the 3 inner with double stalked distinct glands at the base. Anthers linear, 4-celled, all looking inwards. Female with as many sterile stamens as the male, or fewer; the inner often confluent. Fruit succulent, placed on the thick fleshy apex of the peduncle, and seated in the torn unchanged calyx. — Flowers yellow, before the leaves. Leaves deciduous.

697. S. officinale *N. and E. handb.* ii. 418. *pl. med.* t. 131. *Nees Laurin.* 488. — Laurus sassafras *Linn. sp. pl.* 530. *Mich. Fl. bor. am.* i. 244. *Arbres forest.* iii. p. 173. t. 1. — Woods of North America from Canada to Florida.

A small tree or bush, flowering before the leaves. Leaves membranous, bright green, smooth above, finely downy beneath, very variable in form, some being obovate, others deeply 3-lobed, and some lobed only on 1 side, all however tapering in a wedge-like manner into the petiole. Racemes naked, downy, with subulate deciduous bracts. Fruit bright blue, rather larger than a pea, upon red clavate peduncles. — The bark of the root, which is thick and blood red, contains a great quantity of essential oil. It has a high reputation as a powerful sudorific, and combined with guaiacum and sarsaparilla in cutaneous affections, chronic rheumatism, and old siphylitic maladies. The dried leaves contain so much mucilage that they are used in Louisiana for thickening soup, like Hibiscus esculentus. The bark of the branches as well as the wood have been employed: but they are inferior to the bark of the root. Martius says (*Travels* ii. 96.), that this plant is found commonly in the forests of S. Paul, in Brazil, where it is employed as a diuretic and sudorific; but he probably means some other plant.

698. S. Parthenoxylon *Nees Laurin.* 491. — Laurus Parthenoxylon *Jack. mal. misc. in Bot. misc.* ii. p. 76. — Laurus porrecta *Roxb. hort. calc* 30. Laurus pseudosassafras *Blume bijdr.*

573. — Forests of Sumatra, where it is called "Kayo Gadis" or Virgin tree. Java.

A lofty timber tree. Bark brown and rough. Leaves alternate, rather long-petioled, ovate, acute, often acuminate and varying in breadth, about 3 inches long, entire, with somewhat revolute edges, smooth, glaucous beneath; nerves lateral and irregularly alternate. Petioles round, 1 inch long. Peduncles from the young shoots at the extremity of the branches, axillary or lateral, terminated by a short few-flowered panicle, and generally longer than the young leaves from whose axils they spring. Bracts none. Perianth funnel-shaped, 6-parted, yellowish. *Jack.* — The fruit has a strong balsamic smell and yields an oil considered useful in rheumatic affections. An infusion of the root is drunk as Sassafras and with similar effects. (May this not be the "Oriental Sassafras wood" mentioned under the article Laurus in Rees's Cyclopædia? *Jack.*)

BENZOIN.

Flowers dicœcious, involucrated. ♂. Calyx 6-parted with equal permanent segments. Fertile stamens 9, in 3 rows. Anthers ovate, 2-celled, looking inwards. Glands 6–9 in 2 or 3 rows, with a reniform compressed head, alternate either with the stamens of the second and third row, or with those of the first and second row, added obliquely to the third row. ♀ flowers smaller than the male with (12?) sterile stamens, among which spathulate bodies are dispersed. Fruit succulent, seated on the permanent 6-cleft calyx. — Flowers before the leaves, in sessile umbels. Leaves membranous, deciduous.

699. B. odoriferum *Nees Laurin.* 497.—Laurus Benzoin *Linn. sp. pl.* 530. *Barton mat. med.* ii. t. 33. Laurus pseudo Benzoin *Mich. fl. bor. am.* i. 243. — Low moist places, damp shady woods from Canada to Florida. (Spice wood, spice berry, Fever wood,) &c.

A bush, 8–10 feet high. Leaves oblong or elliptical wedge-shaped, membranous, green on each side, slightly downy beneath. Flowers yellow, in little naked umbels on the naked branches. Fruit the size of an olive, bright red, in clusters. — Bark highly aromatic, stimulant and tonic; given in decoction or powder in intermittents. An infusion of the twigs a vermifuge. Oil of the berries, which are aromatic, a stimulant; these berries are said to have been used in the United States during the American war as a substitute for allspice.

TETRANTHERA.

Flowers dicœcious, some hermaphrodite, involucrated. Calyx 6-parted; segments nearly equal, deciduous or wanting, or only 3, 4 or 5 and those small and petaloid. Fertile stamens in the 6-cleft flowers 9 in 3 rows; in the petaloid or naked flower 12–15–21; anthers ovate, 4-celled, all looking inwards. Sterile stamens 6, sessile or stalked, gland-like, attached in pairs to the

3 interior stamens. Stigma peltate. Fruit berried, placed on the expanded tube of the calyx. — Involucres deciduous. Leaves variable, with pinnate veins, in some nearly opposite.

700. T. Roxburghii *Nees Laurin.* 515. — Sebifera glutinosa *Lour cochin.* ii. 783. Litsea sebifera *Pers. synops.* ii. p. 4. Tomex sebifera *Willd. sp. pl.* ii. 840. Tetranthera apetala *Roxb. corom. pl.* ii. t. 147. — Mountains of India; the Circars, Goalpara, Monghir, Chittagong, Sylhet, Cochin-china, Java.

A variable plant. Leaves ovate-oblong, acute at the base, smooth and shining above, more or less downy beneath. Umbels rather compound, nearly white. Flowers apetalous. Stamens more than 9. Involucre 4-leaved: the leaves roundish, concave, hoary on the outside. Fruit globose, black, about the size of a pea. — The fruit yields a greasy exudation, from which the Chinese manufacture candles of bad quality, and which serves as the basis of salves. The leaves and branches are full of a glutinous matter which is readily communicated to water in which they are bruised.

LAURUS.

Flowers dicœcious or hermaphrodite, involucrated. Calyx 4-parted; segments equal, deciduous. Fertile stamens 12 in 3 rows; the outer alternate with the segments of the calyx; all with 2 glands in the middle or above it. Anthers oblong, 2-celled, all looking inwards. ♀ with 2–4 castrated males surrounding the ovary. Stigma capitate. Fruit succulent, seated in the irregular base of the calyx. — Umbels axillary, stalked. Leaf buds with valvate papery scales. Leaves evergreen.

701. L. nobilis *Linn. sp. pl.* 529. *N. and E. handb.* ii. 416. *pl. med.* t. 132. *Nees Laurin.* 579. Δαφνη *Dioscor.* — Asia Minor, Basin of the Mediterranean, Greece, Italy, Spain and Portugal. Common ingardens. (Sweet Bay.)

An evergreen bush or tree from 15 to 25 feet high. Branches smooth, green, densely leafy, with an aromatic rather bitter bark. Leaves alternate, lanceolate or oblong-lanceolate, acute or acuminate, wavy at the edge, rather leathery, quite hairless on both sides; with a small pore and fine beard at the axils of the lower veins, on the under side. Umbels 4–6-flowered, somewhat globose, in small axillary clusters; enclosed in papery, scarious, roundish, concave scales. Flowers yellowish-white, glandular-dotted, membranous. Stamens smooth. Fruit the size of a very large pea, ovate, black, covered with a succulent coat. — Leaves and fruit are both aromatic; the latter enter into the composition of the *emplastrum cumini* of the London Pharmacopœia. The fixed oil is sometimes employed externally as a stimulant.

*** Daphnidium Cubeba *Nees.* Laurus Cubeba *Lour.* is an obscure plant, known to no one since the time of Loureiro. Its fruit, the size of a pepper corn, is reported to be a powerful aromatic. See *Nees* p. 616.

ARISTOLOCHIACEÆ.

Nat. syst. ed. 2. *p.* 205.

ARISTOLOCHIA.

Calyx superior, tubular, coloured, permanent; tumid, and nearly globose, at the base; limb dilated; either lobed and equally spreading, or unilateral and undivided. Filaments consolidated into a notched cup, crowning the ovary within the calyx; anthers 6, sessile on the outer surface of the cup, each of 2 oblong, separated, parallel, bivalve, cells. Ovary inferior, oblong, angular. Style scarcely any. Stigma nearly globular, with 6 deep lobes; the summit concave. Capsule with 6 angles, 6 cells, and 6 valves, with double partitions from their inflexed margins. Seeds numerous in each cell, depressed, horizontal, lying over each other, triangular, with a dilated or thickened winged margin.

702. A. bracteata *Retz. obs.* v. No. 80. *Roxb. fl. ind.* iii. 490. — Cultivated ground on the coast of Coromandel.

Root perennial, long, slender, simple, perpendicular, waved, with many small fibres issuing from every part of it. Stems or branches several, weak, resting on the ground, waved, striated, from 12 to 18 inches long. Leaves alternate, petioled, kidney-formed, beautifully, though slightly, curled round the margin, a little rugose, glaucous underneath; about 2 inches each way; petioles channelled. Flowers axillary, single, peduncled. Peduncles drooping, with a kidney-shaped, curled, sessile bract near the base. Calyx with the upper part of the tube and tongue erect; the latter has its margins revolute; the colour a most beautiful dark purple; covered on the inside with hairs of the same colour. Anthers 6 pairs. Capsules ovate. *Roxb.*— Every part nauseously bitter; in India, for a purging with gripes, two of the fresh leaves are rubbed up with a little water and given to an adult for a dose, once in 24 hours. *Roxb.* An infusion of the dried leaves is given as an anthelmintic; fresh bruised and mixed with castor oil they are considered a valuable remedy in obstinate cases of itch.

703. A. indica *Linn. sp. pl.* 1362. *Roxb. fl. ind.* iii. 489. — (*Rheede* viii. t. 25.).— Copses and jungles in India, in poor soil.

Root much like that of Sarsaparilla, perennial. Stem twining, below woody. Leaves stalked, wedge-shaped or obovate, 3-nerved, pointed, waved, scolloped, smooth, 2–4 inches long, 1–2 broad. Racemes axillary, shorter than the leaves, with bracts. Flowers erect. Anthers in 6 pairs. Anthers oblong, pendulous. *Roxb.* — Root nauseously bitter; the Hindoos suppose it to possess emmenagogue and antarthritic virtues.

704. A. grandiflora *Swartz prodr.* 121. *fl. ind. occ.* iii. 1566. *Willd.* iv. 155. — Mountain thickets in Jamaica.

Stem twining, woody at the base. Leaves stalked, alternate, cordate, rather acute, entire, nerved, veiny, smooth on each side, 4–5 inches long. Flowers solitary, axillary, very large. Calyx narrow and 6-angled at the base, downy externally; above the base ventricose and compressed; in the middle contracted, round, angular; higher up reflexed; finally dilated into a large, ventricose, oblique limb, which is entire, somewhat cordate, flaccid, wavy, velvety purple, marked with white, terminated by a linear acuminate appendage a foot long. — The whole plant emits a powerful narcotic unpleasant smell, which Swartz compares to that of Chenopodium vulvaria. It is poisonous to hogs, according to the same author.

704 *a*. A. cymbifera *Mart. n. g. et. sp.* i. 76. t. 49. *Lindl. in Bot. Reg.* xviii. t. 1543. — A. grandiflora *Gomez in act. olyssip.* 1812. p. 64. *c. ic.* A. ringens *Martius trav.* Eng. ed. ii. 91. not of Vahl. — Shady thickets in the province of S. Paul, and near Rio Janeiro.

Stem twining, covered with a corky cracked bark. Leaves very large, cordate-reniform, smooth, with a very open sinus at the base, bordered by the bases of the lateral ribs. Flowers very large, yellow mixed and spotted with purple, hairy inside, with an obovate tube, and an abruptly reflected 2-lipped limb; upper lip short, ovate, carinate, acute; lower four times as long, inflated and cymbiform at the base, gradually extended into a broad, plaited, roundish, membranous extremity. — The root, which has a very penetrating, disagreeable smell, like that of rue, and a strong, bitter, aromatic taste, produces almost entirely the same effects as the Virginia snake-root (A. serpentaria). It is very frequently used in Brazil against ulcers, paralytic affections of the extremities, dyspepsy, impotentia virilis, in nervous and intermitting fevers, especially those in which a predominant disorder of the pituitous membrane, or the whole lymphatic system has been observed, and, lastly, against the bites of serpents. According to Gomez, the powdered root is given in doses of a scruple, from 4 to 6 times a day; the decoction is ordered in doses of 4 to 6 ounces, and the juice expressed from the leaves, of 1 or 2 drachms daily. *Martius's Travels*, ii. 91.

704 *b*. A. macroura *Gomez* l. c. *Martius* l. c. p. 79. — Woods of Brazil. (Jarrinha.)

Stem twining, smooth, angular, furrowed; stipules reniform. Leaves cordate at the base, 3-lobed. Peduncles 1-flowered. Tube of the calyx obovate; limb deflexed, cylindrical, enlarged at the throat, 1-lipped; lip cordate-deltoidal from the base, thrice as broad as the throat, extended into a crenulated point above a foot long. *Martius.* — The root and herb are similar in their effects to those of the last, but more potent.

705. A. fragrantissima *Ruiz in Lamb. cinch.* 175. t. 4. — In the woods of the Peruvian Andes. (Star reed.)

A climbing shrub. Root fusiform, very long, as much as 6 inches thick, greyish brown; bark 1–4 lines thick; wood radiated in a transverse section, whitish, easily separating into numerous flexible plates.

Stems climbing to the tops of trees, taper, flexuose; shoots striated, downy or woolly. Leaves on long stalks, cordate, entire, with a long point, smooth and roughish above, downy beneath. Peduncles axillary, solitary, in pairs, or in threes, four times shorter than the petioles. Calyx brownish pink, 2 inches long, tubular, villous inside, bluntly hexagonal; with an oblique 1-lipped, tongue-shaped, glandular limb which is reflexed at the apex. Capsule oblong, bluntly hexangular. The stems when stripped of their bark resemble cords, and are employed in Peru as ropes. — Used by the Peruvian Indians as a remedy for dysenteries, malignant inflammatory fevers, colds, rheumatic pains, and various diseases arising from fatigue. Antiseptic, odontalgic, sudorific. Flavour bitter, camphorous, balsamic. The Indians also apply it pounded or bruised fresh to the bites and stings of reptiles and insects, as a powerful antidote to their poison. *Ruiz.*

706. A. trilobata *Linn. sp. pl.* 1361. *Willd.* iv. 151. *Swartz obs.* 341. *Jacq. eclog.* t. 26. *Bot. reg.* xvii. t. 1399. — A. trifida *Lam. enc.* ii. 249. — Woods in the West Indies.

Stem shrubby, twining, round. Leaves on long stalks, cordate, 3-lobed; the lobes oblong, obtuse, nearly equal; stipules combined into 1 large, cordate, roundish leaf. Flowers solitary; the peduncle and ovary taken together shorter than the petiole, large, pale-yellow. Tube of the calyx inflated, cylindrical, angular, with 6 short obtuse unequal spines at the base; broken inwards in the middle, 2-lipped; one of the lips being very large, cordate, brown-purple, puckered, with a very long, twisted linear point or tail. — Reputed to be an antidote to the bites of serpents. If taken in doses of from 6–20 grains it is a sudden and powerful sudorific.

707. A. anguicida *Linn. sp. pl.* 1362. *Jacq. amer.* 232. t. 144. — Thickets of Carthagena.

Roots branched, pithy, filled with a bitter orange nauseous fetid juice. Stems round, at the base corky, at the upper part smoothish, striated, twining; about 10 feet high. Stipules large, solitary, converging. Leaves cordate-acuminate, entire, flat, smooth on each side, netted underneath, with a short downy stalk. Peduncles axillary, solitary. Flowers greenish, with purple veins; the limb on one side lanceolate acuminate. — The juice of the root chewed and introduced into the mouth of a serpent so stupifies it that it may for a long time be handled with impunity; if the reptile is compelled to swallow a few drops it perishes in convulsions. The root is also reputed to be an antidote to serpent-bites. *Jacquin*, l. c.

708. A. Serpentaria *Linn. sp. pl.* 1363. *Woodv.* t. 106. *Bigelow med. bot.* iii. t. 49. — A. officinalis *N. and E. handb.* ii. 400. *pl. med.* t. 144. — Woods in the southern and middle parts of the United States.

Height most commonly under a foot. Root extremely fibrous, and sending up a number of stems, which are simple or slightly branched, jointed, flexuose, and often with a reddish tinge. Leaves alternate, on short petioles, oblong, entire, acuminate, heart-shaped, at base 3-nerved. The flowers grow close to the ground, like those of Asarum; they have a stiff leathery texture, and a dull brownish purple colour. The peduncle which supports them has one or more bracts, and gradually

enlarges into a furrowed obovate ovary. The calyx, like others in this singular genus, consists of a long contorted tube, bent in the form o. the letter S, swelling at its two extremities, having its throat surrounded by an elevated edge or brim, and its border expanded into a broad irregular margin, forming an upper and under lip, which are closed in a triangular manner in the bud. The anthers are 12 in number, growing in pairs to the sides of the fleshy style, which is situated in the bottom of the calyx, and covered by a firm, spreading convoluted stigma, which extends over the anthers. Capsule obovate, 6-angled, 6-celled, with numerous small flat seeds. *Bigelow.* — The root has a penetrating resinous smell, and a pungent bitter taste. It acts as a stimulant, tonic, diaphoretic, and in certain cases as an antispasmodic and anodyne. It is peculiarly useful in supporting the strength and in allaying the irregular action which attend great febrile debility. Dr. Chapman considers it "admirably suited to check vomiting and to tranquillise the stomach, more particularly in bilious cases."

709. A. pallida *Willd. sp. pl.* iv. 162.;

710. A. longa *Linn. sp.* 1364.;

711. A. bœtica *Linn. sp.* 1363.;

712. A. sempervirens *Linn. sp.* 1363.; and

713. A. rotunda *Linn. sp.* 1364., are slightly aromatic stimulating tonics useful in the latter stages of low fever; the taste is bitter and acrid; the odour strong and disagreeable. They are said to be sudorific, and have been employed as emmenagogues in amenorhœa. They are supposed to be the plants with which the Egyptian jugglers stupify the snakes they play with.

714. A. Clematitis *Linn. sp. pl.* 1364. *Eng. Bot.* t. 398. *Smith Eng. Fl.* iv. 377. — Waste places in a few localities in England, common on the continent. (Birthwort.)

Root perennial. Stem erect, smooth, about 3 feet high, simple, flexuose, emitting an Elder-like disagreeable smell when bruised, tumid and polished at the nodes. Leaves alternate, smooth, roundish-ovate, entire, obtuse, reniform at the base, with pedate veins; petiole as long as the lamina, furrowed, smooth. Flowers pedicellate, clustered, axillary, erect or pendulous, shorter than the petioles. Calyx dull pale yellow, inflated at the base, with a straight cylindrical tube, slightly hairy internally, and an oblique, ovate, emarginate, obtuse concave limb. Column very small, roundish, depressed, slightly triangular, with 1-sessile 2-celled anther on each angle and face. — The roots are powerfully stimulating, when fresh they have a very disagreeable smell. They have been chiefly employed as aids to difficult parturition.

715. The Guaco of the Caraccas, reported to be a powerful remedy for the bites of serpents, is said by Dr. Hancock to be some plant of this genus.

ASARUM.

Calyx bell-shaped, coriaceous, coloured, permanent, in 3 rather deep, upright segments, with incurved points. Filaments 12,

awl-shaped, half the length of the calyx. Anthers attached to the inner side of the filaments, below the summit, each of 2 round, separated cells. Ovary turbinate. Style columnar, furrowed, nearly as long as the stamens. Stigma in 6 deep, stellated, recurved segments. Capsules coriaceous, of 6 cells, not bursting. Seeds several in each cell, obovate, with a pale longitudinal crest.

716. A. europæum *Linn. sp. pl.* 633. *Woodv.* t. 86. *Eng. Bot.* t. 1083. *Eng. Fl.* ii. 342. — Mountainous woods in various parts of England. (Asarabacca.)

Roots creeping, entangled, with numerous, branching, stout fibres, their scent when bruised very peculiar, partaking of pepper and ginger Stems very short and simple, round, each bearing 2 dark green, shining, kidney-shaped, rather downy, leaves, 2 inches wide, on long, downy stalks, and 1 drooping flower, not an inch long, fleshy in substance, of a lurid and singular aspect. — The powdered leaves are used to provoke sneezing; a few grains at a time may be safely taken, and they produce a considerable discharge of fluid by the nostrils. *Smith.* — Roots purgative, emetic, and diuretic. Called Cabaret in France, because, as is said, drunkards use it to produce vomiting.

717. A. canadense *Linn. sp. pl.* 633. *Bigelow med. bot.* i. t. 15. — Woods and mountainous tracts from Canada to Carolina. (Canada snakeroot, wild ginger.)

Rhizoma creeping, fleshy, and somewhat jointed. Leaves kidney-shaped, pubescent on both sides, with long, round, hairy petioles. Flower solitary, growing from the fork of the stem, on a pendulous hairy peduncle. Calyx very hairy or woolly, consisting of 3 broad, concave leaflets, which are mostly of a brownish or dull purple on the inside at top and bottom, and terminated by a long, spreading, inflected point, with reflexed sides: the colour varies greatly according to the amount of light which the plant enjoys, being sometimes nearly green. Subulate processes 3, below the sinuses of the calyx in the inside of the tube. Stamens 12, inserted on the ovary at a distance from the calyx, the alternate ones longer. Anthers adnate, shorter than the subulate filaments. Ovary inferior, somewhat hexagonal; style conical, striated, parted at top into 6 recurved, radiating stigmas. — Rhizoma agreeably aromatic, very unlike that of A. europæum. A warm stimulant and diaphoretic, acting like Aristolochia Serpentaria; not emetic as has been asserted.

AMARANTHACEÆ.

Nat. syst. ed. 2. *p.* 207.

GOMPHRENA.

Bractlets 2, coloured, carinate, enveloping the 5 sepals. Tube of stamens 5-cleft; segments 2- or 3-cleft or denticulate, having in their middle cylindrical 1-celled anthers. Style single; stigmas 2, cylindrical. Utricle closed, 1-seeded.

718. G. officinalis *Mart. nov. gen. and sp.* ii. t. 101, 102. *Aug. de St. Hil. pl. us.* No. 31. — South and middle of Brazil.

Root perennial, tuberous, sometimes as large as the fist, rather woody internally. Stems ascending, from a span to a foot high, reddish-green, very hairy or shaggy. Leaves in 3 or 4 pairs on each stem, ovate or oval, short stalked, mucronulate, shaggy like the stems. Flowers capitate, deep-red, shining. Heads terminal, sometimes as much as 3 inches in diameter, hemispherical, compact, surrounded by an involucre of several rows of acute bracts. An external bractlet to each flower, long, acuminate-triangular, dry, membranous, scarlet in the middle; inner bractlets deep scarlet. Calyx of the same colour. — The Brazilians employ the root for nearly the same purposes as Aristolochia Serpentaria is employed in North America; it appears to be a stimulating tonic. The thick clubshaped root is chiefly used in spasms, dyspepsy, intermittent fevers, diarrhœa, &c., and is called *Paratodo*.

718 *a*. * Amaranthus viridis *L.* and melancholicus *L.* respectively called Carurú and Carurú vermelho in Brazil, are used in that country for emollient poultices.

* * Amaranthus obtusifolius is mentioned as a diuretic: but such a species is not to be found in systematical works.

CHENOPODIACEÆ.

Nat. syst. ed. 2. *p.* 208.

CHENOPODIUM.

Calyx inferior, in 5 deep, ovate, concave, permanent segments, membranous at the edges. Filaments awl-shaped, opposite to the segments, and about as long. Anthers of 2 round lobes. Ovary orbicular, depressed. Styles short. Stigmas obtuse. Seed

solitary, lenticular, crustaceous, enveloped in a very thin, membranous, close utricle, and covered by the permanent, 5-angled calyx.

719. C. olidum *Curt. lond.* v. t. 20. *Eng. Bot.* t. 1034. *Eng. Fl.* ii. 14. — C. vulvaria *Linn. sp. pl.* 321. *Woodv.* t. 145. — Waste ground, common in many places, especially near the sea. (Stinking goosefoot.)

Root small. Stems several, branched, spreading or prostrate. Whole herb of a dull greyish-green, covered with a greasy mealiness, which, when touched, exhales a strong, permanent, nauseous odour, like stale salt-fish. Leaves stalked, acute, entire, ovate, or slightly rhomboid, not an inch long. Flowers small, in oblong, interrupted spikes. Seed dotted. — According to Chevallier this plant exhales pure ammonia, during its whole existence. Notwithstanding its nauseous odour it is still employed as an antispasmodic and emmenagogue, and is constantly to be found in the herb-shops of Covent Garden market.

720. C. baryosmon *Röm. and Sch.* vi. 269. — Salsola fœtida *Delile descr. de l'Egypte n.* 310. — Upper Egypt.

An undershrub. Branches spreading rather downy; twigs fasciculate, filiform, whitish, hoary, flattish, about 3–4 inches long, and standing in the room of leaves. Flowers occasionally solitary, but more frequently arranged in slender leafless spikes, which are very numerous, from 2 to 4 lines long, and either spreading or erect. Bracts to each flower 2–3, very small, obtuse, downy. Filaments twice or thrice as long as the calyx, with large yellow anthers. Style simple; stigma small, bifid. — An excessively fœtid plant: which Mr. Burnett supposed may be used for the same purposes as the last.

721. C. Botrys *Linn. sp. pl.* 320. *Römer and Sch.* vi. 259. *Sibthorp Fl. Græca* t. 253. *Torrey fl. amer.* i. 296. — Southern parts of Europe, Siberia, Pennsylvania, in sandy waste places. (Jerusalem oak.)

An annual. Stem about a foot high, branched, downy, and a little viscid. Leaves stalked, 2 inches long, deeply sinuate, with the segments toothed. Racemes panicled, very large; branches somewhat one-sided. Flowers distinct, on very short pedicels. Seeds smooth, not shining. *Torrey.* — The whole plant is powerfully and agreeably fragrant. It is reported by French physicians to be a valuable expectorant, and to have been employed with much advantage in catarrh and humoral asthma.

722. C. anthelminticum *Linn. sp. pl.* 320. *Bart. mat. med.* ii. t. 44. *Röm. and Sch.* vi. 261. *Torrey fl. am.* i. 296. — Sandy fields in the United States. (Wormseed.)

A perennial. Stem 1½–2 feet high, erect, much branched, often reddish, furrowed. Leaves oblong-lanceolate, nearly sessile, toothed, and somewhat sinuate, sprinkled beneath with resinous atoms. Racemes long, slender, axillary and terminal. Style 3-cleft. *Torrey.* — The whole plant has a strong, heavy, disagreeable odour. It yields from the seeds an abundance of oil, which, under the name of wormseed oil, is powerfully anthelmintic. The expressed juice, or the leaves or seeds in powder, have similar properties.

723. C. ambrosioides *Linn. sp. pl.* 320. *Röm. and Sch.* ii. 260. *Torrey fl. amer.* i. 295. — Common in waste places in the United States. (Mexican tea.)

An annual. Stem 1–2 feet high, much branched, often spreading, green, a little downy. Leaves lanceolate, 1½ inch long, on short stalks, acute at the base, remotely toothed; the upper ones almost linear. Racemes simple, axillary, leafy; about 2 inches long, erect. Flowers green. — All the plant has an agreeable penetrating smell. It has been used with advantage in the treatment of nervous diseases, and Plenck commends it in chorea.

ATRIPLEX.

Polygamous. ♂. Calyx inferior, concave, permanent, in 5 deep, equal, ovate, segments, thin or membranous at the edges. Filaments 5, awl-shaped, from the bottom of the calyx, opposite to its segments, and about as long. Anthers of 2 round lobes. Ovary superior, orbicular, often very imperfect. Style short, deeply divided. Stigmas simple, spreading. Seed 1, orbicular, depressed, wrapped in a thin close utricle, and covered by the closed, permanent, 5-angled calyx. ♀. Sepals 2, large, flat, compressed, cordate, closely enclosing a 1-seeded utricle.

724. A. angustifolia *Smith fl. brit.* 1092. *Eng Bot.* t. 1774. *Eng. fl.* iv. 258. — A. patula *Huds. Fl. angl.* 443. — Common in waste places.

An annual, with a dull greyish green aspect. Stem herbaceous, spreading. Leaves lanceolate, entire; the lower ones partly 3-lobed. Calyx of the fruit hastate, slightly warted at the sides. — Seeds said to be emetic.

725. A. hortensis *Linn. sp. pl.* 1493. *Lam. enc.* i. 276. *illustr.* t. 853. f. 1. *Schkuhr.* t. 349. *Römer and Schultes* vi. 282. — Tartary. (Garden Orache.)

An annual. Stems 4–5 feet high, striated, smooth, bluntly angular, branched. Leaves generally alternate, rather large, triangular, toothed, of the same colour on both sides, acute, when young mealy. Flowers small, in terminal, interrupted, branched spikes. Sepals of the fruit ovate, reticulated, entire. — Seed reputed to be emetic. The leaves an old-fashioned potherb, once cultivated in lieu of Spinach.

SALSOLA.

Flowers hermaphrodite, bracteate. Sepals 5, acquiring a transverse appendage at the back. Hypogynous scales 0. Stamens 5 (seldom 3) inserted into an hypogynous ring or cup. Stigmas 2, usually combined at the base, rarely 1, subsessile and capitate. Utricle depressed, somewhat papery. Seed horizontal, without albumen, with membranous integuments. Embryo spiral. Radicle dorsal. — Leafy or leafless herbaceous plants and shrubs,

with succulent sub-cylindrical leaves. Flowers axillary and sessile. Dorsal appendages of the sepals wing-like. Utricle occasionally slightly baccate.

*** According to Guibourt the sodas of commerce are furnished by the following plants. Soda of Alicant which is the finest, by *S. sativa*, *Kali*, *Soda* and *Tragus*; it contains from 25 to 40 per cent of Carb. of Soda. Soda of Narbonne, by *Salicornia annua* L., it contains 14–15 per cent. of Carbonate of Soda. Blanquette or Soda of Aigues-mortes, procured from a mixture of salt plants, with from 3–8 per cent. of the carbonate; finally Normandy Soda, obtained from Fucus.

726. S. Kali *Linn. sp. pl.* 322. *Eng. Bot.* t. 634. *Woodv.* t. 143. *Fl. Dan.* t. 818. *Eng. Fl.* ii. 18. — Common in Europe and the colder parts of Asia either on the sandy sea shore, or in arid deserts.

An annual plant, forming a bushy stem, covered with rigid spiny channelled leaves, which are a little dilated, membranous and notched at the base. Flowers solitary, each with 3 leaf-like bracts. Calyx dilated, membranous, reddish, converging over the fruit, each sepal with a small leafy appendage on the outside. Fruit turbinate, winged.

727. A. sativa *Löfl. it.* 132. *Cavan ic.* iii. 46. t. 291. *Willd.* i. 1311. *R. and S.* vi. 236. — Coast of Spain, in the kingdom of Valentia.

An annual, with a succulent root. Stem herbaceous, about a foot high, with spreading, taper, reddish branches, and scattered, numerous, smooth, sessile leaves like those of Sedum. Flowers sessile, axillary, 5–7, with 3 minute ovate scales at the base. Calyx very small, but larger than the bracts, with its lobes by degrees dilated into small rounded spreading lobes. Seeds small, compressed, spiral. *Poiret.*

728. S. Soda *Linn. sp. pl.* 323. *Willd.* i. 1311. *Desfont. atl.* i. 216. *Jacq. hort. vind.* t. 68. — South of Europe, north of Africa, salt-plains of the Crimea, &c.

An annual often growing 3 or 4 feet high and falling prostrate by its own weight. Leaves long, spreading, fleshy, ash-coloured, with 3 narrow green lines on the upper side. Within the axil of each leaf are two smaller ones which are triangular and keeled. Sepals 5, lanceolate, whitish. Stamens rather longer than the calyx. Styles 2. Ovary rapidly growing into an urceolate fruit which is depressed at the apex. The full grown calyx very hard, half oval, flattish above, and bordered, 5-parted in the middle, falling away with the fruit.

729. S. Tragus *Linn. sp. pl.* 322. *Pall. illustr.* ii. 37. t. 29. f. 2. *R. and S.* vi. 227. — (*Lobel. ic.* 797. f. 2.) — South of Europe, north of Africa, Caspian and Euxine seas on the sandy shore.

A species resembling *S. Kali* from which it chiefly differs in having the calyx after flowering furnished with short dorsal appendages, which in *Kali* are longer than the calyx, very broad, round, membranous and transparent.

PHYTOLACCACEÆ.

Nat. syst. ed. 2. *p.* 210.

PHYTOLACCA.

Calyx 5-parted, coloured, permanent. Stamens and styles 10, or more. Fruit depressed, furrowed, 10- or more-celled, covered with a succulent flesh. Seeds solitary.

730. P. decandra *Linn. sp. pl.* 631. *Bot. Mag.* t. 931. *Bigelow med. bot.* i. t. 3. — North America. Supposed to have been introduced to the south of Europe, where it is now a common weed. "Pocan" is the Virginian name, whence "Poke" the vulgar name; also "Garget, Cocum, Jalap, Pigeon-berries" in North America.

Root of a large size, frequently exceeding a man's leg in thickness, usually branched, fleshy, fibrous, and easily cut or broken; internally distinctly marked with concentric rings of considerable thickness, while its outer surface is covered with a very thin brownish bark, which seems to be little more than a cuticle. Stems, which are annual, frequently 6, or even 9 feet high, round, smooth, and very much branched; when young, their usual colour is green; but in most plants after the berries have ripened, they are of a fine purple. Leaves scattered, stalked, ovate-oblong, smooth on both sides, ribbed underneath, entire, acute. Flowers on long pedunculated racemes opposite to the leaves. Peduncles nearly smooth, angular, ascending. Pedicels divaricated, sometimes branched, green, white, or purple, furnished with a small linear bract at the base, and two others in the middle. Calyx whitish, consisting of 5 round-ovate, concave, incurved sepals. Stamens 10, rather shorter than the sepals, with white, roundish, 2-lobed anthers. Ovary round, depressed, 10-furrowed. Styles 10, short, recurved. Berries in long clusters, dark purple, almost black, depressed or flattened, and marked with 10 furrows on the sides. — Root an emetic, approaching nearly to Ipecacuanha. Bigelow says, that "from abundant experience, the result of many trials made in dispensary practice, I am satisfied that, when properly prepared, it operates in the same doses and with the same certainty" as that drug. Its exhibition sometimes attended by slight narcotic symptoms. Externally applied it excites a sense of heat and smarting; it cures psora, and tænia capitis.

POLYGONACEÆ.

Nat. syst. ed. 2. *p.* 211.

COCCOLOBA.

Calyx 5-parted, permanent, eventually becoming succulent. Filaments 5, inserted into the base of the calyx, and forming a short ring by their union. Style 3; stigmas simple. Nut 1-seeded, bony, covered with the succulent enlarged calyx. Embryo in the middle of the albumen.

731. C. uvifera *Linn. sp. pl.* 523. *Jacq. amer.* 112. t. 73. *Bot. mag.* t. 3130. — (*Sloane* ii. 129. t. 220. f. 3.) — Sea coast of the West India Islands and the adjoining coast of America. (Sea side grape.)

A tree 20 feet or more in height, much branched, the branches flexuose. Leaves very beautiful, ample, orbicular-cordate, coriaceous, entire, obtuse, waved, of a full bright and glossy green, with the principal nerves red, especially at the base. Petioles short, with combined sheathing stipules at their base. Racemes terminal, long, erect in flower, afterwards cernuous; pedicels short, in many closely placed fascicles, with little scales or bracts at their base. Flowers fragrant. Calyx small, white, in 5 deep spreading segments, uniting into a fleshy attenuated base, which is jointed upon the pedicel. Stamens 5, combined at the base into an annulus which surrounds the germen. Ovary superior, ovate. Styles 3. Stigmas obtuse. As the fruit advances to maturity, it becomes enveloped by the enlarged and fleshy perianth, which thus forms an obovate, reddish, purple berry, resembling a small pear, with a scar at the top where the segments of the perianth had been attached: within is 1 cell, divided at the base into 3 imperfect cells, whose dissepiments enter into the base of the nut. Nut roundish, very acute, longitudinally wrinkled, 3-lobed at the base below, and attached by the centre. Albumen copious, marked with numerous clefts and fissures at the margin. In the middle of this, or nearly so, is the foliaceous embryo, with its radicle pointing upwards. *Hooker.* — The leaves, wood and bark are excessively astringent; the decoction, prepared by evaporation, forms Jamaica kino. The fruit is eatable, and commonly sold in the West India markets, but is not much esteemed. The wood yields a red dye.

RHEUM.

Calyx petaloid, 6-parted, withering. Stamens about 9, inserted into the base of the calyx. Styles 3, reflexed. Stigmas peltate, entire. Achenium 3-cornered, winged, with the withered calyx at the base. Embryo in the centre of the albumen.

*** This genus is very important, on account of the officinal rhubarb being produced by some of the species. It is, however, not a little curious that up to the present time no one should have ascertained with certainty from which of the many known species any of that which finds its way to Europe through Turkey and Russia, is really obtained.

The species inhabit the plains of Tartary, the wastes of Siberia, and the lofty mountains cutting off India from the high and cold table land to the north. They are all similar in their flowers, but their leaves, particularly the leafstalks, afford excellent marks of distinction when the plants are wild. In the gardens they hybridise so readily, that it hardly possible to say to which of the wild types the many cultivated sorts are referable. In the following account, I have included every species with which I am acquainted, or of which an account can be found in books. There is some confusion in the synonymy, which I have endeavoured to adjust; but the genus requires all the care of a skilful monographist. Guibourt seems to me to have studied the subject with more attention than any one; and I have accordingly incorporated his opinions in the following short history of the species.

It will be seen that the whole subject is involved in the greatest obscurity: and it is probable that Professor Royle is correct in his opinion that the officinal drug, obtained in the heart of Thibet, whither no botanist has ever penetrated, is the produce of some species still unknown. I extract the following account of the origin of officinal rhubarb from this gentleman's excellent *Illustrations of the Botany of the Himalaya Mountains, &c.* "The rhubarb of commerce is well known to be brought by the Chinese to the Russian frontier town of Kiachta, according to the treaty formed between those powers in 1772. The Chinese obtain the rhubarb produced in China Proper, from that part of the province of Shensee now called Kansu, situated between N. lat. 35° and 40°; but the best, according to the missionaries, who say it is called Tai-hoang, in the province of Letchuen, from the mountains called Sue-chan, or of snow, which extend from N. lat. 26° to 33° and from about 100° to 105° of E. longitude. That from the latter province probably forms much of what is called China rhubarb: the missionaries met large quantities of it, brought down in the months of October and November. That from Kansu may afford some of what is called Russian rhubarb; but both Pallas and Rehman have ascertained that the greater portion, if not the whole of this, is obtained in April and May from the clefts of rocks in high and arid mountains surrounding lake Kokonor. Bell also learnt that it was the produce of Mongolia, and Marco Polo of Succuir, in Tanguth. Dr. Rehman ascertained that the trade is in the hands of one Bucharian family, who farm the monopoly from the Chinese government, and reside at Si-ning, a Chinese town on the very frontiers of Tibet, 3000 verstes from Kiachta, and 20 days journey from Kian-sin and Schan-sin, Tangutian towns, where the Bucharians go to purchase rhubarb. This would bring the rhubarb country within 95° of E. long. in 35° of N. latitude, that is in the heart of Thibet.

732. R. Emodi *Wallich MSS. Cat. herb. ind.* No. 1727. *Hooker in Bot. mag.* t. 3508. — R. australe *Don prodr. fl. nep.* 75.; *id. in Sweet Fl. Gard.* t. 269. — Mountains of Gossain Than, Kamaon.

Stems 6 to 10 feet high, much branched and sulcated, very thick below, gradually attenuated upwards into large panicles, and there rough with minute warts or excrescences: the colour yellow-green, streaked with red-brown. Leaves very large, but gradually smaller upwards, roundish-cordate, entire, somewhat wavy, slightly rough upon the surface and the margin. Petioles thick, angled and furrowed, rough, embracing the stem by means of the large, bifid, sheathing membranous stipules. Panicles, or rather compound racemes, terminal, very long, the branches erect, virgate, rough. Pedicels solitary or clustered, somewhat verticillate, short, spreading in fruit, deflexed. Flowers very small, of a deep blood-red colour. Calyx of 6 spreading, ovate, deep segments, 3 alternate ones smaller. Stamens 9, shorter than the perianth. Filaments subulate, monadelphous at the base. Ovary short, triquetrous, often abortive. Styles 3, spreading. Stigmas large, warty. Fruit pendent, dark blood-coloured, shining, cordate, triangular, the angles sharply winged, covered at the base with the persistent perianth, of which the 3 smaller segments are applied to the 3 winged angles. Seed ovato-triquetrous. *Hooker.* To the foregoing description by Sir W. Hooker, I add, for the sake of a better contrast with other species, the following more exact character of the leaves and petioles: — Leaves cordate, acute, dull green, but little wavy, flattish, very much wrinkled, distinctly rough, with coarse short hairs on each side; sinus of the base distinctly open, not wedge-shaped but diverging at an obtuse angle, with the lobes nearly turned upwards. Petioles very rough, rounded-angular, furrowed; with the upper side depressed, bordered by an elevated edge, and very much narrower at the upper than the lower end. It was stated by Professor Don (*Edinb. Phil. Journal*), when this plant was first made known, that it was the undoubted origin of the Russian and Turkey rhubarbs. But Mr. Pereira, who had samples of the root from Dr. Wallich, found that the specimens had hardly any resemblance to the rhubarb of the shops. The roots of this and R. Webbianum nevertheless appear to be valuable as medicines; for Mr. Twining reported that, after an experience of 43 cases in the general hospital at Calcutta, he found them, as tonic and astringent, superior to corresponding quantities of the best rhubarb, but not on the whole so eligible in obstinate costiveness on account of their aroma and astringency. They are less disagreeable to take than the best Turkey rhubarb, nearly as efficacious as a purge, and very superior in small doses as a tonic and astringent in profluvia. *Royle's Illustr.*, p. 316.

733. R. Webbianum *Royle illustr.* 318. — R. Emodi *Meisner in Wall. pl. as. rar.* iii. 65. *not of Wall.* — Gossain Than; Niti.

Root leaves large, long-stalked, cordate, acute; cauline obtuse; rather downy above, veiny beneath and margin hairy; petioles rounded. Upper branches and peduncles round, smooth, slightly striated. Axillary racemes clustered, terminal, panicled; pedicels in threes, twice as short as the ripe fruit. Sepals entire, broadly oval, obtuse. Achenium somewhat cordate at the base, entire or a little emarginate at the point. *Royle.* — See the last species. This is possibly what Mr. Moorcroft found at Niti, at the height of 12,000 feet above the sea.

734. R. spiciforme *Royle illustr.* 318. t. 78. — Northern face of the Himalayas, at the Kherang pass, and several places beyond.

Leaves thick, leathery, cordate, blunt, red and netted beneath, and covered with stellate down on each side; petioles and peduncles smooth. Racemes arising from the very root, spicate. Pedicels numerous, clustered, as long as the ripe fruit. Sepals oblong, obtuse, the alternate ones narrower and petaloid. Fruit rounded at the base and apex.—Nothing is said of the quality of the roots, except that they are lighter coloured and more compact than those of R. Emodi. It appears that the rhubarb of Tartary grows at the height of 16,000 feet above the sea; and Dr. Royle says that rhubarb sent by the late Mr. Moorcroft from near Ludak, lat. 34° N., long. 77½° E., was, for compactness of texture, colour and properties, as fine as any he has ever seen; it is not improbable that it may have been furnished by this species.

735. R. Moorcroftianum *Royle illustr.* p. 318. — *Wall. herb. ind. n.* 1727. ("Small stalked rhubarb.")

This plant has not been described. Professor Don has obliged me with the following notes upon the differences between it and R. spiciforme:—"*R. Moorcroftianum* has the petioles more deeply furrowed; the stipules as long as the petioles, and much more membranous. The imperfect rudiments of leaves (scales) at the base are even longer than the stipules, and are extremely thin and much torn, especially towards their summits. The fruits are larger, and angles broader and more winged. *R. spiciforme* has the lamina of its leaf of a thicker and firmer texture; the stipules twice or thrice shorter than the petioles. The imperfect rudiments of leaves (scales) on the collum are short, entire, and less membranous, and imbricated. These scales in the former (*Moorcroftianum*) are often longer than the petioles. The leaves and stems of both species are clothed with short scabrous pubescence, and the sepals agree in size and form.—Root of this is said to be more purgative than the last.

736. R. leucorhizum *Pall. n. act. petrop.* x. 381. 1792. *Willd. sp. pl.* ii. 491. *Ledebour ic. pl. ross.* t. 491. *fl. altaic.* ii. 92.—R. nanum *Sievers in Pall. n. nord. beitr.* vii. 264. R. tataricum *Linn. Suppl.* 229.? — Stony places on the mountains of Dolenkara, Tschingistau and Arkalyki in the Soongorian Kirghese desert; also near the rivers Dschargurban and Kurtschum.

A small plant for this genus. Root white, branched, about 3 inches in diameter next to the stem. Radical leaves about 3, short-stalked, coriaceous, 4–6 inches long, 5–9 inches broad, transversely elliptical, scarcely hollowed out at the base; with 3, thick, branched nerves projecting very much beneath; smooth on both sides, toothletted at the edge, with here and there a few scattered roughish warts; no cauline leaves, or scarcely ever one; petioles about an inch long, compressed, solid, with a narrow channel on the upper side. Flowering stem about 2 inches high, when in flower, afterwards becoming 10–12 inches high, about as thick as the finger, simple as high as the middle, then divided into several rigid divaricating branches. Flowers much fewer than in other species; the alternate segments of the calyx 3 or 4 times smaller than the others. Fruit very large, 6 lines broad and 4 lines long, or even longer, deep red. *Ledebour.* — Ledebour says nothing of the roots. "When Pallas was at Kiachta, the Bucharian merchants who supplied the crown with rhubarb, brought some pieces of rhubarb, which had a

white taste, and was equal in its effects to the best sorts." *Pereira.* It is said to have been the produce of this plant.

737. R. rhaponticum *Linn. sp. pl.* 531. *Ait. Kew.* ii. 41. *Willd. sp. pl.* ii. 488. — Rhaponticum *Alp. rhapont.* i. t. 1. — Thrace *Linn.;* borders of the Euxine sea; more abundantly north of the Caspian, in the deserts between the Volga and the Yaik; also Siberia on the mountains of Krasnojar. *Guibourt.*

Leaves roundish-ovate, cordate, obtuse, pale green, but little wavy, very concave, even, very slightly downy on the under side, especially near the edge, and on the edge itself; scabrous at the margin; sinus quite open, large and cuneate. Petiole depressed, channelled on the upper side, with the edges regularly rounded off, pale green, striated, scarcely scabrous. Panicles very compact and short, always rounded at the ends, and never lax as in the other common garden species. Flowering stem about 3 feet high. — According to Guibourt the root of this is bitter, astringent, and aromatic; when chewed mucilaginous and not at all gritty; the smell like that of rhubarb, but more disagreeable. It is cultivated in large quantities at a place called Rheumpole, near Lorient in the department of Morbihan. The prepared root is said to be extremely like Rhubarb in appearance, and to be what was analysed by M. Henry as French Rhubarb. (*Bull. de Pharmacie*, vol. vi. p. 87.)

738. R. undulatum *Linn. sp. pl.* 531. *Amœn. acad.* iii. 212. t. 4. *Willd. sp. pl.* ii. 489. *S. and C.* t. 177. — R. rhabarbarum *Linn. syst. veg.* 385. — China, *Ammann*; Siberia, *Guibourt.*

Leaves oval, obtuse, extremely wavy, deep green, with veins purple at the base, often shorter than the petiole, distinctly and copiously downy on each side, looking as if frosted when young, scabrous at the edge; sinus open, wedge-shaped, with the lower lobes of the leaves turned upwards. Petiole downy, blood red, semicylindrical, with elevated edges to the upper side, which is narrower at the upper than the lower end. — A Tartarian merchant, a dealer in rhubarb, gave what were, or what were said to be, seeds of the genuine Rhubarb plant to Kauw Boerhaave, first physician to the Emperor of Russia, about the year 1750, and those seeds produced both *R. undulatum* and *palmatum*. Georgi further states that a Cossack pointed out to him the leaves of the former as the true species. Hence it was once regarded as the real officinal plant, and cultivated as such by the Russian Government; but the culture is discontinued, and Guibourt states that he never could make real Rhubarb from it. It is cultivated in France, and forms a part of the French Rhubarb. Stevenson and Churchill say that what is sold in the herb shops under the name of English Rhubarb is this; but I have great doubt of the accuracy of this latter assertion; for the species is but little known in this country. R. rhaponticum, hybridum, compactum, and hybrid varieties of them are the common garden Rhubarbs.

739. R. caspicum *Fischer.* — R. rhaponticum *Ledebour fl. altaic.* ii. 91. ? — Caspian ?; (stony places on the lower of the Altaic mountains, never in the plains *Ledebour.* ?)

Leaves ovate, acuminate, obtuse, cordate and inflexed at the base;

very wavy, deep green, of a thick texture, glossy and rather even on the upper side, scabrous at the edge, slightly downy on the under side, but quite smooth above; sinus a little open; the lobes of the leaves quite rolling inwards. Petiole pale green, with scarcely a tinge of red, minutely downy, semicylindrical, with elevated edges to the flat upper side, which is of equal breadth at each end. — The plant described by Dr. Ledebour in his Flora Altaica is certainly not R. rhaponticum, as is proved by the form of its petiole; nor can I see how it differs from R. caspicum of which there exists a plant from Dr. Fischer himself, in the Apothecaries' Garden, Chelsea.

740. R. compactum *Linn. sp. pl.* 531. *Mill. dict.* t. 218. *Willd. sp. pl.* ii. 489. — Tartary, China. *Linn.*

Leaves heart-shaped, obtuse, very wavy, deep green, of a thick texture, scabrous at the margin, quite smooth on both sides, glossy and even on the upper side; sinus nearly closed by the parenchyma. Petiole green, hardly tinged with red except at the base, semicylindrical, a little compressed at the sides, with the upper side broad, flat, bordered by elevated edges, and of equal breadth at each end. — Guibourt says that the root of this is a pretty good imitation of Chinese Rhubarb; but when cleared of the yellow powder that covers it, there is no difficulty in recognising it by its reddish or whitish red colour, its smell of "rhapontic" (in which respect it corresponds with undulatum), its close radiated marbling, its staining the saliva yellow only in a slight degree, and in its not being gritty.

741. R. palmatum *Linn. sp. pl.* 531. *Ait. Kew.* ii. 41. *Willd. sp. pl.* ii. 489. *Woodv.* t. 46. *S. and C.* t. 25. — Country about the great wall of China, *Linn.*; a long chain of mountains, partly naked of forests, which, skirting Chinese Tartary on the west, commence to the North not far from the town of Selia, and extend to the South as far as Lake Kokonor, near Thibet, *Murray.*

Leaves roundish-cordate, half palmate; the lobes pinnatifid, acuminate, deep dull green, not wavy, but uneven and very much wrinkled on the upper side, hardly scabrous at the edge, minutely downy on the under side; sinus completely closed: the lobes of the leaf standing forwards beyond it. Petiole pale green, marked with short purple lines, terete, obscurely channelled quite at the upper end. Flowering stems taller than those of any other species. — I have already mentioned under *R. undulatum* how this has obtained the character of being at least one of the sources of Tartarian Rhubarb. Pallas was however assured by the Bucharian Rhubarb merchants that they knew nothing of such leaves as those of this species, and that the leaves of genuine Rhubarb were round and much cut at the edges. Pallas considered this account to agree best with *R. compactum*, whose leaves however are more wavy than cut. Nevertheless the opinion that *R. palmatum* is the source of the true officinal rhubarb continues to be generally entertained. In the last edition of the London Pharmacopœia this is asserted; and M. Guibourt declares that of all the cultivated kinds *R. palmatum* alone resembles exactly, in its odour and smell, the rhubarb of China. It is stated by Stevenson and Churchill that *R. palmatum* is extensively cultivated near Banbury for the supply of the London Market.

742. R. crassinervium *Fischer.* — Native country not known to me.

Leaves heart-shaped, acuminate, obtuse, wavy, excessively bullate, deep green, quite smooth on both sides, rather glossy on the upper side, scabrous at the edge; the ribs slightly coloured red, and the central ones above ½ an inch deep at the base; sinus open, cuneate, with the lobes of the leaf inflected. Petiole dull red, rounded, rather angular, with a narrow flattened upper side, the edges of which are raised, and which is narrower at the point than at the base. — This is undoubtedly quite distinct from any other species, but has not yet flowered; the form of the petiole approaches that of R. Emodi, but the leaf is quite different. It was sent by Dr. Fischer from the Imperial Garden at St. Petersburgh with this name, and is now growing in the Apothecaries' Garden at Chelsea. Mr. William Anderson, the gardener there, states that the roots, when 3 years old, being accidentally uncovered, were found as thick as the wrist, and brittle; and when examined at Apothecaries' Hall were found to possess the peculiar colour and odour of the best Turkey Rhubarb.

R. hybridum *Murray*, and R. Ribes *Gronov.*, are not medicinal species.

RUMEX.

Calyx of 3, obtuse, spreading, permanent external leaves, more or less combined at the bottom, and of 3, ovate, larger internal ones, similar in colour, though thinner in texture, and more veiny; subsequently enlarged, converging round the fruit, and permanent, bearing, in some species, a dorsal grain or tubercle. Filaments capillary, very short. Anthers erect, oblong, of 2 lobes. Ovary triangular, rather turbinate; sometimes in a separate flower. Styles capillary, spreading, protruding between the petals. Stigmas large, in many fine tufted segments. Nut enclosed within the interior, enlarged, closed sepals, triangular, polished, with 3 sharp edges. Embryo oblong, on one side of the albumen.

743. R. crispus *Linn. sp. pl.* 476. *Eng. Bot.* t. 1998. *Fl. Lond.* t. 20. *Eng. Fl.* ii. 191. —A common weed all over Europe. (Dock.)

Root tapering, yellowish. Stem 2 or 3 feet high, angular, furrowed, somewhat zigzag, smooth to the touch, panicled, leafy. Leaves lanceolate, acute, strongly undulated and crisped at the edges, smooth, of a lightish green; the radical ones on long stalks; the uppermost narrower, and nearly sessile. Clusters of numerous, rather crowded, tufts, or whorls, of drooping pale green flowers; in the lower part leafy. Inner sepals always much larger than the outer, veiny, waved, each bearing a large, ovate, brown tubercle. Nut contracted at each end, with 3 blunt or tumid angles. *Smith.* — This common weed has the reputation of being, in decoction or ointment, a cure for the itch; the root which is astringent, is the part used.

744. R. obtusifolius *Linn. sp. pl.* 478. *Eng. Bot.* t. 1999.

Fl. Lond. t. 22. *Eng. Fl.* ii. 192. — A common weed all over Europe. (Dock.)

Root black, many-headed, yellowish within. Stems a yard high, erect, branched, round, furrowed, leafy, rough chiefly in the upper part Radical leaves very large, stalked, deep green, veiny, heart-shaped, more or less blunt; the rest narrower, more pointed, on shorter stalks; all crenate and crisped in some degree. Clusters long, of numerous, many-flowered whorls, of which the lower ones are most distant, and leafy. Inner sepals large, oblong, obtuse, veiny; subsequently furnished with 3 sharp teeth at each side, one of them also bearing a brown, or reddish tubercle, of a smaller proportion than most species. Fruit rather large, acute, with 3 sharp angles. *Smith.* — Properties similar to those of the last species. The root in powder also employed as a dentrifice.

745. R. Acetosa *Linn. sp. pl.* 481. *Eng. Bot.* t. 127. *Woodv.* t. 69. *Eng. Fl.* ii. 196. — A common plant in pastures and on banks. (Common Sorrel.)

Root long and tapering, astringent, somewhat woody. Herb smooth, powerfully and agreeably acid. Stem 1–2 feet high, erect, simple, leafy, striated. Lower leaves stalked, somewhat ovate, arrow-shaped, with 2 lateral teeth; upper sessile, more oblong, and narrower. Stipule tubular, membranous, fringed. Clusters erect, compound, whorled, leafless. Flowers dicœcious. Males green with a reddish tinge. Inner sepals ovate, rather larger than the outer. Females rather redder. Inner sepals ovate, obtuse, red, entire, each bearing an oblong pale tubercle. *Smith.* — An agreeably acid plant. It acts as a refrigerant and diuretic. A decoction of the leaves may be employed in the form of a whey as a cooling and pleasant drink in febrile and inflammatory diseases.

746. R. alpinus *Linn. sp. pl.* 481. *Campd. monogr.* 105. t. 2. f. 1. *N. and E. pl. med.* t. 110 and 111. — Alps of Europe, the Crimea, the summits of Caucasus. (Monk's Rhubarb.)

Radical leaves cordate-ovate, obtuse, wrinkled, wavy, with the veins of the under side downy; those of the stem unequal at the base; the uppermost lanceolate. Whorls close together, somewhat leafless, collected in a dense panicle. Flowers polygamous. Inner sepals becoming cartilaginous, cordate-ovate, rather blunt, nearly entire, naked. — Root thick fleshy, purgative like Rhubarb, only in a much less degree. Linnæus by an inconceivable mistake took it for a variety of Rheum rhaponticum, adding "easdem esse species nullus quidem neget, qui structuram plantæ utriusque inspexerit!" He however subsequently changed his opinion.

POLYGONUM.

Calyx turbinate, more or less coloured, in 5 deep, ovate, obtuse, permanent segments. Filaments various in number, 5, 6, 7, or 8, awl-shaped, very short. Anthers roundish, incumbent. Ovary roundish, either triangular or compressed. Styles generally 3; in those with a compressed ovary only 2, thread-shaped, very short, in some species partly combined. Stigmas simple.

Nut solitary, either triangular or compressed, pointed. Embryo enveloped in farinaceous albumen.

747. P. Hydropiper *Linn. sp. pl.* 517. *Eng. Bot.* t. 989. *Fl. Lond.* t. 26. *Eng. Fl.* ii. 235. — Common in ditches and watery places.

Root fibrous, whorled, as in most of the genus. Herb smooth. Stem erect, 2 feet high, branched, round, more or less red and shining, swelled above each joint. Leaves lanceolate, undulated, stalked, pale shining green, without spots. Stipules fringed with unequal bristles, very obscurely ribbed. Clusters terminal, long and slender, curved, interrupted, leafy in their lower part; their partial flower-stalks erect, close, accompanied by tubular, sheathing, abrupt, coloured bracteas. Calyx 4- or 5-cleft, variegated with red, white and green, covered with glandular dots, such as are scattered more or less universally, over the whole herbage, and in which its acrid quality resides. Stamens 6, rarely 8. Styles united nearly half way up. Stigmas capitate, often red, sometimes 3. Fruit compressed, purplish black. — Leaves so acrid as to act as vesicants. It is reputed to be a powerful diuretic, but to lose its activity by drying, on which account it requires to be used fresh. Will dye wool yellow.

748. P. Bistorta *Linn. sp. pl.* 516. *Eng. Bot.* t. 509. *Fl. Lond.* t. 22. *Woodv.* t. 34. *Eng. Fl.* ii. 236. — Pastures and meadows, especially in the north. (Bistort.)

Root creeping, fleshy, or rather woody, often bent or zigzag, powerfully astringent. Stems solitary, simple, erect, straight, leafy, 1½ or 2 feet high, round, striated, smooth. Leaves smooth, ovate, wavy, blunt-ish, glaucous beneath; radical ones somewhat heart-shaped, and nevertheless decurrent, making a narrow wing to their footstalks. Footstalks of the stem-leaves tubular and sheathing, each crowned with a membranous jagged stipula. Cluster terminal, leafless, erect, cylindrical, dense, many-flowered, interspersed with membranous, notched, brown, bracteas. Partial stalks simple, very slender. Calyx rose-coloured, deeply 5-cleft, obtuse, spreading. Stamens 8, longer than the calyx. Styles quite distinct, with small obtuse stigmas. Fruit triangular, black and shining. *Smith.* — A powerful astringent. The decoction may be employed in gleet and leucorhœa, as an injection; as a gargle in relaxed sore throat and spongy gums, and as a lotion to ulcers attended with excessive discharge. Internally it has been employed, combined with gentian, in intermittents. It may also be used in passive hæmorrhages and diarrhœa. *Pereira.*

749. P. aviculare *Linn. sp.* 519. *Eng. Bot.* t. 1252. *Fl. Lond.* t. 27. *Eng. Fl.* ii. 238. — Common every where in sandy waste places, hard beaten gravel walks, &c. (Knot grass.)

Root fibrous, long, very tough, and somewhat woody, branched below, simple at the crown. Stems several, spreading in every direction, generally prostrate, much branched, round, striated, leafy at the numerous knots or joints. Leaves alternate, stalked, hardly an inch long, elliptic or lanceolate, entire, obtuse, single-ribbed, smooth except at the margin, tapering at the base, very variable in width; their sub-

stance rather coriaceous, their colour greyish, or glaucous. Stipules membranous, acute, often red, with a few remote brownish ribs. Flowers axillary, 2 or 3 together, on simple stalks, small, but often singularly beautiful under a magnifier, being variegated with white, crimson, and green. Stamens 8, rarely 10, short and broad. Ovary triangular. Styles 3, short, with thick, blunt stigmas. Fruit acutely triangular, of a shining black, the food of many small birds. *Smith.* — Fruit said to be emetic and cathartic.

750. P. barbatum *Linn. sp. pl.* i. 518. *Thumb. fl. cap.* 385. *Meisner polyg.* p. 80. — China, East Indies, Cape of Good Hope, and elsewhere.

Stem herbaceous, rufous. Leaves lanceolate; stipules sheathing, lax, pilose, truncated, fringed with long bristly ciliæ. Spikes long, virgate. Flowers hexandrous, trigynous, remote. — Considered a diuretic at the Cape of Good Hope; in India the infusion of its leaves is prescribed by native practitioners to alleviate the pain of severe colic. *Burnett.*

751. P. amphibium *Linn. sp. pl.* 517. *Eng. Bot.* t. 435. *Fl. Lond.* t. 28. *Eng. Fl.* ii. 232 — Common in ponds, ditches and wet places.

Stems creeping, root-like, with numerous whorls of red or white fibres; round, branching in the lower part, leafy. Leaves stalked, generally floating, ovate-lanceolate, more or less acute, single ribbed, minutely serrated, smooth, bright green, slightly heartshaped at the base. Stipule sheathing, abrupt, wavy, smooth. Flowers crimson, in dense, ovate, stalked, bracteated heads. Stamens 5. Styles 2, united at base; stigmas globular, red. Fruit ovate, compressed, with 2 obtuse edges. — The root-like stems of this Polygonum bear some resemblance to sarsaparilla, and according to Coste and Willemet, they are substituted for the foreign drug by the herbalists of Nancy; these authors also report, that it resembles true sarsaparilla in its properties, and that the apothecaries and druggists of Lorraine use it in preference. *Burnett.*

PETIVERIACEÆ.

Nat. syst. ed. 2. p. 212.

PETIVERIA.

Sepals 4. Stamens 6–7–8. Styles 4, permanent, eventually becoming spiny and reflexed. Fruit armed with spines at the apex.

752. P. alliacea *Linn. sp. pl.* 486. *Act. holm.* 1744. p. 287. t. 7. *Trew. Ehret.* t. 67. *Willd. sp. pl.* ii. 284. — Various parts of the West Indies. (Guinealien weed.)

A small bush with a powerful and disagreeable alliaceous odour. Stem straight, erect, but little branched, deep green, striated, downy. Leaves oblong, obovate, or oblong-lanceolate, obtuse, acute or acuminate, scabrous at the edge; glandular near the petiole which is both glandular and downy; stipules small, subulate, spiny. Spikes 2 or 3, long, naked, slender, terminal, drooping at the upper end. Rachis angular. Flowers distant, white, placed close to the rachis; calyx 4-parted, with linear spreading segments, which afterwards become erect, leafy, and cover over the fruit. — All the parts are excessively acrid; a small portion of the leaves chewed is said by Burnett to render the tongue as dry and black and rough as it appears in cases of malignant fever. The negroes consider it a sudorific, and say that vapour baths or fumigations of it will restore motion to paralysed limbs. The roots are used in the West Indies as a remedy for toothach; the negresses also employ it to procure abortion. *Schomb. in Linnæa.* ix. 511.

752 *a.* P. tetrandra *Gomez in act. Olyssip.* 1812. p. 17. is employed in Brazil under the name of *Raiz de Pipi* in warm baths and lotions as a remedy for defective contractibility of the muscles, or in paralysis of the extremities arising from cold. *Martius.*

NYCTAGINACEÆ.

Nat. syst. ed. 2. p. 213.

MIRABILIS.

Involucre like a calyx, 5-cleft, 1-flowered. Calyx petaloid, funnelshaped, hardened and permanent at the base. Stamens 5, inserted into the base of the calyx. Stigma capitate. Fruit with a membranous pericarp, enclosed within the hard tough permanent base of the calyx. Embryo curved round central mealy albumen.

753. M. dichotoma *Linn. am. ac.* iv. 267. *Willd.* i. 999. *Plenck. ic. off.* t. 139. — Jalapa officinarum *Mart. cent.* i. t. 1. Nyctago dichotoma *Juss.* (*Clus. hist.* xc. 3.) — Mexico.

Stem erect, bushy, branching, tumid at the nodes. Leaves ovate-oblong, acute, somewhat repand, smooth, with the petioles and margins downy as well as the young shoots. Flowers sessile, axillary, erect, solitary, with obtuse emarginate segments; or clustered and terminal; very sweet at night. Calyx slender, pale red. — The thick fleshy root is purgative, and at one time was taken for the Jalap of the shops.

754. M. Jalapa *Linn. sp. pl.* 252. *Bot. Mag.* t. 371, a common border flower, with similar roots, is said by some not to be purgative; by others to be so, and to be used for adulterating true Jalap.

755. M. longiflora *Linn. sp. pl.* 252. *Act. holm.* 1755. p. 176. t. 6. f. 1. *Smith exot. bot.* t. 23. — Mexico, in the colder parts of the mountains. (Marvel of Peru.)

A prostrate, branching, downy plant. Leaves cordate, acute, nearly or quite sessile, repand and wavy, viscid as well as downy. Flowers clustered, sessile, white with a purple eye, very fragrant at night, at which time they open; the tube of the calyx exceedingly long and slender. — The root is said to be more purgative than that of any other species.

BOERHAAVIA.

Involucre calyx shaped, turbinate, enveloping the fruit. Calyx plaited, short and inconspicuous. Stamens 2, 3, 6, 12. Stigmas 3. Fruit composed of the hardened and permanent base of the calyx, enclosing a thin 1-seeded pericarp.

756. B. decumbens *Vahl. enum.* i. 284. *R. and S.* i. 64. — B. paniculata *Rich. act. soc. h. n. par.* i. 105. B. laxa *Pers. synops.* i. 36. B. diandra *Aubl. guian.* i. 4. — Guiana, Santa Cruz, Tortola. (Hogmeat.)

Stem striated, purplish, with very few hairs. Leaves very distant, about an inch long, somewhat orbicular, cordate, rounded at the point, obscurely repand, ciliated, pale on the under side, not dotted, but covered with short thick close-pressed hairs; petioles smooth. Peduncles branched upwards. Panicle ascending, very lax, leafless. Flowers capitate. — According to Aublet the root is emetic, and called Ipecaquana in Guiana. Schomburgk states that it is astringent, and used in the form of decoction in dysentery.

757. B. tuberosa *Lam. illustr.* i. p. 10. — A native of Persia, is reported to act both as a cathartic and emetic.

758. Pisonia fragrans is reported to be an active emetic; and in a memoir read before the Royal Academy of Medicine in Paris, it is said to be used as such in Cuba. *Burnett's Outlines*, No. 1819. But what is Pisonia fragrans?

MENISPERMACEÆ.

Nat. syst. ed. 2. *p.* 214.

COCCULUS.

Flowers unisexual, (always ?) diœcious. Calyx of 12 sepals in 4 series, with 2, 3, or more close-pressed bracteoles. ♂. Stamens 6, or rarely 3, opposite to the inner sepals, distinct: anthers 2-celled, terminal, dehiscing vertically: filaments either filiform with the anther, cells horizontal, approximate, and each externally 2-lobed, or thickened at the apex with the cells divaricating downwards, and separated by the connective. ♀. Ovaries 3, 6, or numerous. Drupes 1–6, or numerous, 1-celled, 1-seeded. Peduncles axillary or rarely lateral; males usually many-flowered; females generally few-flowered, without bracteas, or with very small ones if present. *W. and A. chiefly.*

759. C. Bakis *Guillem. and Perrot. fl. Seneg.* i. 12. t. 4. — Sides of woods and in hedges, on sandy hills in the kingdom of Cayor, and near Lamsar in the kingdom of Walo, in Senegal.

Root fleshy, fusiform, simple. Stem twining, smooth. Leaves long-stalked, cordate, roundish-ovate, acute, very smooth, with palmate veins. Racemes axillary or terminal, cylindrical, many-flowered; the females always axillary and longer than the petiole. Fruit drupaceous, fleshy, the size of a pea. — Root diuretic and very bitter. It is used successfully by the Negroes, in the form of decoction, in the treatment of the intermittents so frequent in Senegal; and also to stop urethral discharges.

760. C. Fibraurea *DC. syst.* i. 525. — Fibraurea tinctoria *Lour. fl. coch.* 769. — Woods of Cochin-china and China.

Stem long, thick, climbing, consisting of soft yellow fibres. Leaves ovate at the base, acute, entire, smooth, unequally nerved and veined; petioles long, slender, turgid at the base. Flowers white, very small. Fruit small, yellow. — Taste bitter; root diuretic. Used by the Malays in intermittent fevers and liver complaints.

761. C. cinerascens *Aug. de St. Hil. fl. bras.* i. 59. — Woods near Rio Janeiro. (Butua.)

Stem climbing, striated, downy. Leaves 4–5 inches long, and about 3 broad, ovate, cordate at the base, rather acute, mucronulate, sometimes very obtusely 2–5-lobed, crenated, smooth above, downy and ash-coloured underneath; the midrib on the under side prominent and rufous, with about 3 or 4 ribs on each side; petioles about an inch long. — One of the most celebrated of Brazilian remedies for fevers and liver complaints.

762. C. platyphyllus *Aug. de St. Hil. pl. us.* No. 42. *fl. bras.* i. 59. — Province of Minas Novas in Brazil. (Butua.)

Leaves broad heart-shaped, obsoletely crenated, downy and hoary underneath. — Used for the same purposes as the last; the property appears to be owing to the presence of a bitter and tonic principle.

763. C. crispus *DC. syst.* i. 521. — Menispermum crispum *Linn. sp. pl.* 1468. M. verrucosum *Roxb. fl. ind.* iii. 808. Funis felleus *Rumph.* v. t. 44. f. 1. — Java, Amboyna, Baley.

Stems and branches scandent, and twining, round, much warted. Young shoots round and smooth. The plants in 2 years spread themselves entirely over pretty large trees. When by accident, or otherwise, any of the stems or larger branches, are cut in two, long filiform roots spring from the upper portion, let the distance be ever so great, which quickly descend to, and enter the earth; by this wonderful economy the perfectibility of the plant is soon restored; such uncommon care has Nature taken for the preservation of these plants, which must, no doubt, be intended for some purpose, of which we are probably still ignorant. Leaves remote, petioled, cordate, acuminate, entire, smooth on both sides; lobes large, and rounded; from 4 to 6 inches long, and from 3 to 5 broad. Petioles columnar, smooth, two thirds the length of the leaves. ♂. Racemes, 1, 2, 3, or 4 from the scars of the fallen leaves, over the larger naked branches, simple, round, smooth. Flowers generally in pairs on their proper, slender, diverging pedicels; with a small, oval, fleshy bract at their insertion. Calyx 6-leaved; leaflets ovate, small. Petals (inner sepals) 6, cuneate, inserted on the outside of the filaments, a little above their base. Filaments 6, expanding. Anthers 4-sided. *Roxb.* — The whole plant is exceedingly bitter, and is employed by the Malays in the cure of intermittent fevers. It is said to be quite as powerful a febrifuge as Peruvian Bark.

764. C. acuminatus *DC. syst.* i. 527. *Deless. ic. sel.* i. t. 95. *W. and A.* i. 12. — C. radiatus *DC.* l. c. Menispermum acuminatum *Lam. dict.* iv. 101. M. radiatum *id.* 100. M. polycarpum *Roxb. fl. ind.* iii. 817. Tiliacora racemosa *Colebr. in Linn. trans.* xiii. 67. Braunea menispermoides *Willd.* iv. 797. (*Rheede* vii. t. 3.) — Among hedges and bushes in Coromandel and Brazil.

Stem woody, twining to a great extent. Bark ash-coloured. Leaves alternate, petioled, cordate, pointed, smooth, shining, and frequently scolloped, about 5 inches long, and 3 broad. Racemes axillary, erect, in the male frequently compound; in the female simple, erect, bearing but few flowers. Bractes minute, caducous. Flowers small, yellow. ♂. Calyx 9-leaved; the 3 exterior ones small. Petals (inner sepals) 6, obcordate, clawed, about the size of the calyx. Filaments 6, subulate, erect, alternately shorter, of the length of the corolla. Anthers oval. ♀. Calyx, &c. as in the male. Ovaries superior, about 12 in a circle, each ending in a short, subulate style. Stigmas simple. Drupes or berries many, short-pedicelled, ovate, smooth, red, about the size of a French bean. Nut 1, or 2-celled. *Roxb.* — Used as an antidote to the bites of snakes, being rubbed between 2 stones and mixed with water.

765. C. cordifolius *DC. syst.* i. 518. *W. and A.* i. 12. —

C. convolvulaceus *DC.* l. c. — Menispermum cordifolium *Roxb. fl. ind.* iii. 811. (*Rheede* vii. t. 21.) — One of the most common wild plants in India.

Stem twining, perennial, very succulent, running over the highest trees. Bark thick, corky, with many elevated scabrous specks; from the branches there frequently drop filiform fibres, which continue lengthening till they enter the ground, and form additional stems and roots; sometimes they are 30 feet long, and in no part thicker than a pack-thread. Leaves alternate, petioled, broad-cordate, 5-nerved, entire, curved, smooth, about 4 inches each way. Petioles round, smooth, swelled at the base. Racemes axillary, or terminal, or from the tuberosities of former leaves, with frequently a few flowers in separate axils. Flowers numerous, small, yellow. ♂. Calyx 6-leaved; leaflets oval. Petals (inner sepals) 6, wedge-formed, half the length of the calyx; margins inflected and embracing the filaments. Filaments 6, clubbed, spreading, rather longer than the petals. Anthers twin, immersed in the fleshy extremities of the filaments. ♀. Calyx, &c. as in the male. Filaments 6, fleshy, sterile. Ovaries 3, superior, resting on a tumid receptacle. Style single, very short. Stigmas torn. Berries 1, 2, or 3; generally 1 or 2, rarely all the 3, come to maturity, of the size of a small cherry, smooth, red, succulent, with very glutinous pulp, each resting on a tumid receptacle. Seed single, kidney-formed; on the inside there is a deep pit, which receives its receptacle. *Roxb.* — Root large, soft and spongy, like the China Root of the Materia Medica. It is employed by the natives of India, when fresh, in substance, mixed up with sour-rice gruel and sweetened with sugar, for the cure of heat of urine in gonorrhœa. *Roxb.* Under the name of Gulancha (Goluncha-luta, *Roxb.*) it is used in Bengal extensively in a variety of diseases, especially such as are attended by febrile symptoms not of a highly inflammatory kind, and in fevers of debility. The parts used are the stems, root, and leaves from which a decoction called Páchana is obtained. A sort of extract called Pálo is procured from the stem, and is considered an excellent remedy in urinary affections and gonorrhœa. *Trans. M. and P. soc. Calc.* iii. 298.

766. C. palmatus *DC. syst.* i. 523. *Hooker in Bot. mag.* tt. 2970, 2971. — Menispermum palmatum *Lam. dict.* iv. 99. *Berry in as. research.* x. 385. — Thick forests on the shores of Oizo and Mozambique for 15 or 20 miles inland. (Kalumb or Calumba.)

Root perennial, composed of a number of fasciculated, fusiform, somewhat branched, fleshy, curved, and descending tubers, of the thickness of an infant's arm, clothed with a thin, brown epidermis, marked, towards the upper part especially, with transverse warts; internally they consist of a deep yellow, scentless, very bitter flesh, filled with numerous, parallel, longitudinal fibres or vessels. Stems annual, herbaceous, 1 or 2 proceeding from the same root, about the thickness of the little finger, twining, simple in the male plant, branched in the female, rounded, green; in the full-grown plant, below, thickly clothed with succulent longitudinal hairs, which are tipped with a gland. Leaves alternate, the younger ones thin, pellucid, bright green, generally 3-lobed, upwards gradually more numerous; older ones remote, a span in breadth, nearly orbicular in their circumscription, deeply

cordate, 5- to 7-lobed, the lobes entire, often deflexed, wavy on the surface and margin, dark green above, paler beneath; hairy on both sides; the nerves according to the number of lobes, are 3, 7, or 9, pale, connected by veins which, in themselves, are reticulated, prominent beneath. Petiole about as long as the leaf, rounded, glanduloso-pilose, thickened below. ♂ plant. Racemes axillary, solitary, or 2 together, drooping, compound, covered with glandular hairs. Sepals glabrous. ♀. Racemes axillary, solitary, simple, spreading, shorter than those of the male. Fruit drupaceous or berried, about the size of a hazel nut, densely clothed with long spreading hairs, tipped with a black oblong gland. *Boyer.* — The root is a valuable and excellent tonic, having aromatic qualities, but mucilaginous and not acting as a stimulant. It has the power of checking sympathetic vomiting, in female pregnancy, the dentition of children, diseases of the kidneys, &c. It is also used with advantage in the latter stages of dysentery, in habitual diarrhœa, and in a languid state of the stomach. Mr. Pereira says it is of all tonics the least likely to disagree with the stomach. The infusion is the form in which it is usually exhibited, but it must be kept fresh, as it rapidly undergoes decomposition.

PEREIRIA.

Diœcious. ♀. Outer sepals 3, very short and scale-like, but permanent; the 3 inner much longer. Sterile stamens 6, of which 3 surround the base of the ovaries. Styles slender, recurved. Drupes 3 to each flower, succulent, placed in a round-headed receptacle which is elevated on a long stout peduncle. Albumen 2-celled. Embryo inverted, with very thin foliaceous cotyledons, which are wide apart from each other and pierced with numerous small holes. — A climbing plant, with the habit of Menispermum. Flowers in small globular heads. Peduncles of the flowers short, but lengthened and thickened very much for the fruit. Drupes villous.

767. P. medica. — Menispermum fenestratum *Gærtn. fr.* i. 219. t. 46. f. 1. *DC. syst.* i. 451. *Roxb. Fl. Ind.* iii. 809. — Ceylon. (Woniwol, Venivel, or Bangwellgetta. *Ceyl.*)

Trunk and large branches scandent, stout, thick, and ligneous. The wood of a deep, lively yellow colour, and of a pleasant bitter taste. Leaves alternate, petioled, cordate, entire, 5- or 7-nerved, smooth and shining above, very hoary underneath, sometimes acuminate, sometimes obtuse; generally from 3 to 9 inches long, and from 2 to 6 broad. In young plants frequently peltate. Petioles shorter than the leaves, round, downy. Female umbellets, or heads, from the stout, naked, ligneous branches, several from the same bud, on thick, round, downy peduncles, of about an inch in length. Flowers numerous, sub-sessile, villous, of an obscure green. Bracts of the umbellets obscure; those of the flowers 3 or 4, reniform, villous, pressing close on the calyx. Calyx 6-leaved; the 3 exterior sepals oval, small, very downy on the outside, permanent; the 3 interior ones considerably longer. Petals 6, small, short, sterile filaments, 3 embracing the base of the ovaries, very downy. Styles slender, recurved. Berries, from 1 to 3 come to maturity,

nearly round, villous, of the size of a large filbert, each with a single seed, as represented by that excellent and accurate Botanist Gærtner. Receptacle of the fruit; while in blossom the flowers are nearly sessile, on a globular receptacle, of the flowers I will call it, but, like the ovaries in Uvaria, as the fruit advances in size, the very short pedicel of the original flower lengthens into a pretty long, stout, cylindric, villous pedicel, ending in a round-headed receptacle, on which sit from 1 to 3 berries surrounded with the small permanent calyx. *Roxb.* — This is considered by the Cingalese to be an excellent stomachic. The root, which is of considerable size, is sliced and steeped in water, and after several hours infusion the liquid is swallowed.

It is obvious from Roxburgh's account of this plant, as above quoted, that it forms a distinct genus of Menispermaceæ. The male flowers are still wanting to complete our botanical knowledge of it, but the small sterile stamens (or inner sepals), the lengthening thickening peduncle, and the loopholed cotyledons, of themselves afford sufficient marks of distinction. I have named it after my friend Jonathan Pereira, Esq. F.R.S., of whose valuable and original researches into the origin of drugs I have so often had occasion to avail myself in the present work.

ANAMIRTA.

Flowers dicœcious. Calyx of 6 sepals in a double series with 2 closely-pressed bracteoles. ♂. Stamens united into a central Column dilated at the apex: anthers numerous, covering the whole globose apex of the column. ♀. Flowers unknown. Drupes 1–3, 1-celled, 1-seeded. Seed globose, deeply excavated at the hilum. Albumen fleshy: cotyledons very thin, diverging. — Twining, with a corky bark. Leaves more or less cordate-ovate. Flowers in lateral compound racemes. *W. and A.*

768. A. Cocculus *W. and A.* i. 446. — Anamirta paniculata *Colebr. in Linn. soc. trans.* xiii. p. 52. and 66. Menispermum cocculus *Linn. sp. pl.* 1468. *Gærtn. fr.* t. 70. f. i. Cocculus suberosus *DC. syst.* i. 519. C. orbiculatus, lacunosus and flavescens *id.* l. c. Menispermum orbiculatum *Linn. sp.* 1468. M. lacunosum *and* flavescens *Lam. dict.* iv. 98. — Malabar, the Eastern Islands, &c. of India. (Cocculus indicus.)

A strong climbing shrub, with the bark corky, ash-coloured, and deeply cracked into fissures. Leaves roundish, acute, very slightly cordate, if at all, but sometimes truncate at the base, hard, leathery, shining, smooth (said to be downy when young), with 5 digitate ribs, about 6 inches long and as many broad; stalks a little shorter than the leaves, tumid at both ends, especially the lower. Female flowers in lateral compound racemes. Drupes 2–3, globose; cotyledons distant, linear-oblong, very membranous. — The Cocculus indicus seeds of commerce are obtained from this plant. They are a well-known poisonous drug, used occasionally in the form of powder or ointment for destroying pediculi, and in some skin diseases, as porrigo, but chiefly employed to render malt liquor intoxicating. This practice is said to be persevered in, although prohibited by severe enactments. By one man, who writes upon the art of Brewery, it is recommended that 3lbs. be

added to every 10 quarters of malt. It is however a deadly poison in over doses. A case is quoted by Dr. Christison of soup, seasoned with it by mistake, having produced sickness, vomiting, with pain in the stomach and bowels in nine persons, one of whom it is added died in 12 days.

CLYPEA.

Diœcious. Calyx of 6 sepals in a double series, with 3–6 close pressed bracteoles. ♂. Stamens united into a central column, dilated at the apex, bearing several 2-celled anthers; cells opening horizontally, placed end to end, and forming a ring round the top of the column. ♀. Ovary solitary. Stigmas 3, (or rarely 6?). Drupe obliquely reniform; nut compressed, wrinkled round the margin. Seed solitary uncinate. Albumen fleshy. Embryo terete, of the same shape, and about as long as the seed. Leaves peltate. Panicles axillary, both male and female without cordate bracteas. *W. and A.*

769. C. Burmanni *W. and A.* i. 14. — Cocculus Burmanni and peltatus *DC. syst.* i. 516. Menispermum peltatum *Lam. dict.* iv. 96. (*Rheede* vii. t. 49. *Burm. zeyl.* t. 101. Waltiedde *Gœrtn. fr.* ii. t. 180.) — Malabar, Coromandel and Ceylon.

Root long and thick like that of a common Carrot in form and size. Stems slender, green and hairy. Leaves triangular, acuminated, mucronate, slightly cordate at the base, upper side shining and sprinkled with a few hairs, under more or less densely pubescent; panicles narrow, elongated, much longer than the leaves; branches alternate. — Root employed in intermittent fevers and liver complaints; it is extremely bitter and used against dysentery and hæmorrhoids in Malabar.

CISSAMPELOS.

Diœcious. ♂. Sepals 8 in a triple series, the 4 inner united into a cup, with usually an entire margin. Stamens united into a slender column dilated at the apex, bearing two 2-celled anthers opening horizontally; cells placed end to end and forming a 4-lobed 4-celled annulus round the top of the column. ♀. Calyx of 2 lateral sepals, 1 petal in front of the other. Ovary solitary. Stigmas 3. Drupe obliquely reniform; nut compressed, wrinkled round its margin. Seed solitary, uncinate. Embryo long, terete, enclosed in a fleshy albumen. — Twining shrubs. Leaves peltate or cordate, mucronulate at the apex. Racemes axillary; of the males usually trichotomously branched and somewhat corymbose, with subulate small bracteas, or with none at all; of the females simple, elongated, bearing broad alternate foliaceous bracteas, with several 1-flowered pedicels in their axil. *W. and A.* chiefly.

770. C. Pareira *Linn. sp. pl.* 1473. *Swartz obs.* 380. t. 10. f. 5. *Lam. illustr.* t. 830. *Woodv.* t. 82. *DC. syst.* i. 533. — (*Plum.*

amer. 78. t. 93.) — West India Islands, and Spanish Main. (Pareira brava, or Velvet leaf.)

Stems either smooth or with close pressed down. Leaves nearly orbicular, peltate, aristate at the point, when full grown smooth above, underneath covered with silky pubescence, but not truly downy. ♂. Peduncles solitary or in pairs, branching from the base, as long as the petiole or longer, racemose-corymbose, with divaricating downy ramifications: flowers hispid. ♀ Racemes longer than the leaves, bearing the flowers in spiked fascicles. Bracts sessile, somewhat orbicular, scarcely mucronate. Berries scarlet, round, compressed, shrivelled, thinned to the edge, all over hispid with long hairs. — The root of this plant is a well-known tonic, and diuretic, exercising a specific influence over the mucous membrane lining the urinary passages. In large doses it is said to be aperient. It is employed in dyspepsia, gonorrhœa, leucorhœa, and chronic inflammation of the bladder, and in the latter disease more especially it appears to be of very great importance.

771. C. microcarpa *DC. syst.* i. 534, appears to be a mere variety of the last.

772. C. glaberrima *Aug. de St. H. fl. bras.* i. 57. Caapeba &c. *Marcgr. bras.* 25, 26. — Waysides and cultivated places in the provinces of Rio Janeiro and Minas Geraes.

All the plant quite smooth. Stem and leaves bitter, with a stimulating odour like that of Tropæolum. Stem herbaceous. Leaves peltate, ovate, acute, round at the base, quite entire, 11-nerved. Flowers greenish. ♂ Racemose and corymbose. Sepals oblong-linear, 1-nerved; cup campanulate, 4-lobed. — This is the Brazilian Pareira, which M. Aug. de St. Hilaire separates specifically from the West India plant. It appears to possess the same properties.

773. C. ovalifolia *DC. syst.* i. 537. *Aug. de St. H. pl. us.* No. 34. *fl. bras.* i. 51. — Plains in the western part of the province of Minas Geraes, near the town of Paracatù, and in the southern part of the province of Goyaz; Para. (Orelha de Onça.)

Stems suffruticose, erect, simple, downy. Leaves short stalked, ovate, rather obtuse, somewhat repand on each side, or on the under side only; petiole, and female racemes downy. Male racemes usually in threes, and hispid. Inner female sepal villous at the back. *A. de St. H.* — The bitter roots are employed in Brazil, in decoction, as a cure for intermittent fevers.

ABUTA.

According to M. Auguste de St. Hilaire this supposed genus differs from Cocculus in nothing except the absence of the 2 inner rows of sepals. But it appears to me that in such an order as this the character alluded to is sufficient to justify the continuance of the genus.

774. A. rufescens *Aubl. guian.* i. 618. t. 250. *DC. syst.* i. 542. — Woods of Cayenne and Guayana. (White Pareira Brava.)

A shrub with a tortuous trunk climbing over trees. Branches

sarmentose, widely spreading, reaching to the tops of trees; twigs downy leafy. Leaves subcordate, acute, nerved, quite entire, veiny above, and green, ash-coloured and downy underneath; on long thick rigid stalks. Fruit in axillary racemes; pedicels and peduncles ash coloured, villous. — According to Aublet this is the plant that yields the *white* Pareira brava which is imported into Europe as a diuretic. He says that the Creoles and inhabitants of Cayenne employ an infusion as a diet drink against obstructions of the liver, to which they are very subject. The same author adds that *red* Pareira brava is procured from a variety of which the shoots and leaves underneath are covered with a rufous down.

PYROLACEÆ.

Nat. syst. ed. 2. *p.* 219.

CHIMAPHILA.

Calyx 5-toothed. Petals 5. Stamens 10. Filaments sigmoid, ciliated and fleshy at the base. Style short, immersed in the ovary, straight. Stigma auriculate, orbicular, 5-lobed. Capsule 5-celled, opening from the summit; the valves bearing the dissepiments in the middle, and not united by a connecting web.

775. C. corymbosa *Pursh. fl. am. sept.* i. 300. — C. umbellata *Nutt. gen.* i. 274. Pyrola umbellata *Linn. sp. pl.* 567. *Bot. mag.* t. 778. *Torrey fl.* i. 435. *Bigelow med. bot.* ii. t. 21. — Shady woods in northern countries; North America, Siberia, Europe. (Common names are "Winter Green and Pipsisewa.")

Rhizoma woody, creeping. Stems ascending, somewhat angular, and marked with the scars of former leaves. Leaves in irregular whorls, of which there are from 1 to 4; evergreen, coriaceous, on very short petioles, cuneate-lanceolate, acute, serrate, smooth, shining, the lower surface somewhat paler. Flowers nodding in a small corymb, the pedicels with linear bractes about their middle. Calyx of 5 roundish acute teeth or segments, much shorter than the corolla. Petals 5, roundish, concave, spreading, cream-coloured, with a tinge of purple at base. Stamens ten, hypogynous; filaments sigmoid, the lower half fleshy, triangular, dilated, and slightly pubescent at the edges; the upper half filiform. Anthers 2-celled, each cell opening by a short, round, tubular orifice, which points downwards in the bud, but upwards in the flower. Pollen white. Ovary roundish, depressed, furrowed, obscurely 5-lobed, with a funnel-shaped cavity at top. Style straight, half as long as the ovary, inversely conical, inserted in the cavity of the ovary, and concealed by the stigma. Stigma large, peltate, convex, obscurely 5-rayed. Capsule erect, depressed, 5-celled, 5-valved, the partitions from the middle of the valves. Seeds linear, chaffy, very numerous and minute. — Leaves bitter-sweet; stalk and roots the same with a little pungency. A palliative in strangury and nephritis; a diuretic in dropsy; a useful external stimulant; it also alleviates the ardor urinæ in gonorrhœa. The fresh leaves appear to be acrid and to act as vesicants and rubefacients. Its stomachic and tonic properties render it particularly valuable. It has also a popular reputation as a specific against scrophula; and is believed to be the means used by a notoriously ignorant quack who in London employs North American remedies, as a *cure* for scrophula in its worst forms.

ERICACEÆ.

Nat. syst. ed. 2. p. 220.

RHODODENDRON.

Calyx 5-leaved, small, equal, herbaceous. Corolla campanulate or very shortly infundibuliform, rather unequal, with a spreading limb. Stamens 10, declinate; anthers without appendages, opening by 2 terminal pores. Capsule 5-celled, 5-valved, septicidal. — Shrubs with coriaceous and usually evergreen leaves.

776. Rhododendron maximum *Willd. sp. pl.* ii. 606. *Bot. mag.* t. 951. *Bigel. med. bot.* iii. t. 51. — Woods in the United States near the summits of mountains, on the banks of torrents and deep ravines from which rivers take their rise, where the deep shady moist soil and dashing water preserve the atmosphere in a state of perpetual humidity. *Bigelow.* (American Rose-bay.)

A large straggling shrub, very irregular in its mode of growth. Bark greyish, very much cracked and broken. Leaves in tufts at the ends of the branches, evergreen, coriaceous, on round fleshy petioles, oblong-oval, entire, revolute at the edges, and pale underneath; when young, covered with a light woolly coating. Cluster or thyrsus terminal, immediately above the leaves; the peduncles and calyces covered with a glutinous pubescence. Previous to its expansion, the whole cluster forms a large compound bud, resembling a cone, each individual flower-bud being covered by a rhomboidal bract, which falls off when the flower expands. Calyx small, of 5 unequal obtuse segments. Corolla monopetalous, funnel-shaped, with a short tube, the border divided into 5 large, unequal segments, which are white, shaded with lake, the upper and largest having a collection of orange-coloured spots at its centre. Stamens declinate, unequal; filaments white, thickened and hairy at base. Ovary ovate, hairy, glutinous; style declinate, equal to the longest stamens, thickened upwards; stigma a rough surface with 5 points. Capsule ovate, obtusely angular, 5-celled. Seeds numerous, minute. — An astringent, but not narcotic according to Bigelow. Barton however asserts that it is certainly a poison.

777. R. ponticum *Linn. sp. pl.* 562. *Jacq. ic. rar.* i. t. 78. *Pall. fl. ross.* i. 43. t. 29. *Bot. Mag.* t. 650. — The mountains of the west of Persia, Georgia. It first appears, according to Pallas, in the southern subalpine limestone ridge of Caucasus in the districts of Ocriba and Salordkipaniso, preferring damp beech and alder woods in rocky places; now common everywhere in gardens.

A very large evergreen bush or small tree. Leaves coriaceous, large, entire, smooth, becoming brownish underneath, with scarcely any other veins than the midrib; broad-lanceolate, tapering to the stout peduncle. Flowers in close terminal clusters, very showy, of various tints of purple. Corolla shortly campanulate, deeply 5-cleft, with ovate, acute segments, one of which is larger than the others. Stamens 10, purplish, the length of the corolla. — Reported to be deleterious, and to have been one of the plants whose nectar renders the honey of Trebisond poisonous; but this statement of Tournefort is contradicted by Guldenstædt; see Azalea pontica.

778. R. chrysanthum *Linn. suppl.* 237. *Pall. fl. ross.* i. 44. t. 30. — (*Gmel. fl. sib.* iv. 121. t. 54.) — The snow-capped summits of the Sajan mountains; Siberia and Daouria, through all Siberia eastward as far as Kamtchatka.

A small bush 1½ foot high in low places, not a foot high in alpine situations, spreading, very much branched, often almost hidden among moss, from which the tips only of its shoots are protruded. Leaves alternate, of the texture of a laurel leaf, ovate, somewhat acute, tapering into the stalk, reticulated and very rough above, paler and smoother underneath. Peduncles clustered, terminal, loose, emerging from among large downy scales. Flowers large, showy, nodding. Corolla yellow, campanulate, 5-cleft, with rounded segments, of which the 3 upper are rather the largest, and streaked with livid dots next the tube, the lower unspotted. Stamens 10, unequal, deflexed. — The leaves are decidedly narcotic in a remarkable degree. This was first noticed by Steller, a Russian Botanist, who had a tame deer which became so intoxicated by browsing on (about 10 of) the leaves, that after staggering about for some time it dropped into a deep but troubled sleep for the space of four hours, after which it woke free from all sign of suffering; but never would touch the leaves again. After this Steller's Russian servants took to intoxicating themselves with the leaves, without any bad effects. Pallas and Koelpin assert that a strong decoction of the leaves is of the greatest service in chronic rheumatism, and even in venereal complaints; but that it is dangerous in acute rheumatism. Its value as a means of removing arthritic complaints has also been highly spoken of. Finally Pallas mentions an inveterate case of nervous sciatica, which had brought the patient to a state of lameness and deplorable emaciation, which was completely cured by perseverance in the use of the leaves for 2 years. No subsequent inconvenience was experienced, nor any signs of habitual drunkenness, although the dose was as much as 4 fluid ounces of the concentrated infusion daily.

AZALEA.

Calyx 5-leaved, small, equal, herbaceous. Corolla funnel-shaped, usually with a long tube, with a spreading unequal limb. Stamens usually 5, declinate; anthers without appendages, opening by 2 terminal pores. Capsule 5-celled, 5-valved, septicidal. — Shrubs with thin, papery, usually deciduous leaves.

779. A. pontica *Linn. sp. pl.* 427. *Pall. fl. ross.* i. 51. t. 69.

Bot. Mag. t. 433. — Subalpine districts of Caucasus, common in beechwoods and oakwoods. Georgia, Asia Minor.

A hairy deciduous shrub, 3 or 4 feet high, tolerably erect, but much branched; with a pale brown deciduous bark, and leaves clustered about the extremities of the branches. Leaves appearing about the same time as the flowers, oblong-lanceolate, acute, very much wrinkled, thin and papery, ciliated, roughish on the upper side, smooth underneath. Flowers in terminal cymes, 20 or more together, about as long as the rough hairy stalks. Sepals linear-oblong, hairy. Corolla bright yellow, infundibuliform, downy, with a wide oblique limb, the segments of which are ovate, acute, reflexed at the edges. Stamens 5, hairy at the base above the middle, about as long as the corolla. — Dioscorides asserted that the honey collected about Heraclea in Pontus produced alienation of mind with profuse perspiration; and it has been believed that the pestilence which attacked the soldiers of Xenophon in the famous retreat of the 10,000 was caused by the quantity of this honey then eaten. Tournefort ascribed the poison to the flowers of Rhododendron ponticum and Azalea pontica. But Pallas is of opinion that the latter alone was the cause. He says that the effects of the Euxine honey are like those of Lolium temulentum and occur in a country where no Rhododendron grows. The natives are well aware of the deleterious qualities of the plant, and it is related that goats which browse on the leaves, before the pastures are green, suffer in consequence, and moreover that cattle and sheep perish.

LEDUM.

Calyx minute, 4-toothed. Petals 5, spreading. Stamens 5–10, exserted; anthers opening by 2 pores at the apex. Capsules ovate, 5-celled, 5-valved, stalked, dehiscing at the base. Seeds winged at both ends.

780. L. latifolium *Ait. Kew.* ii. 65. *Jacq. ic. rar.* iii. t. 464. *Willd. sp. pl.* ii. 602. *Torrey fl.* i. 437. — L. grönlandicum *Retz. prodr. scand.* ii. 493. — Sphagnous swamps in various parts of the United States, Hudson's Bay, Labrador, Newfoundland, Greenland.

A small evergreen shrub. Stem irregularly branched; branches woolly. Leaves alternate, subsessile, about 2 inches long, and from ¼ to ½ an inch broad, obtuse, covered on the under surface with a dense ferruginous wool; margin folded in. Flowers large, in dense terminal corymbs; pedicels filiform, pubescent. Calyx very minute. Corolla white; petals obovate, obtuse. Stamens about as long as the corolla; filaments slender, smooth; anthers small, opening by two simple terminal pores. Ovary roundish; style straight, about as long as the stamens; stigma small, obtuse. Capsule ovate-oblong, subpubescent; valves separating at the base, with the margins inflexed and connivent; receptacles linear, extending into the cells of the capsule. Seeds minute, terminating in a membrane at each extremity. *Torrey.* — The leaves infused in beer render it unusually heady, producing headach, nausea, and even delirium. They have nevertheless been used, it is said, with advantage in tertian agues, dysentery and diarrhœa. *Pallas.*

781. Ledum palustre *Linn. fl. lapp.* 160, has similar properties.

KALMIA.

Calyx 5-leaved, small, equal, herbaceous. Corolla cyathiform with an angular very open limb, having 10 niches in its sides, within which the points of the anthers are held fast before flowering, but from which they are gradually liberated as the process of fertilization goes on. Capsules 5-celled, with a septicidal dehiscence.

782. K. latifolia *Linn. sp. pl.* 560. *Bot. Mag.* t. 175. *Mich. arbres. forest.* iii. 147. t. 5. *Bigel. med. bot.* i. t. 13. — Common in various parts of the United States; (Laurel, Lambkill, Ivy, Spoonwood, Calico-bush, Mountain laurel).

Height generally that of a shrub, sometimes however attaining the altitude of a small tree. Leaves irregularly alternate, evergreen, coriaceous, very smooth, with the under side somewhat paler, oval, acute and entire. Flowers varying from white to red; in terminal simple or compound corymbs, with opposite branches. Pedicels glutinous, pubescent, with ovate, acuminate bracts. Calyx small, 5-parted, persistent, with oval acute segments. Corolla monopetalous, with a conical tube, a cyathiform limb, and an erect shallowly 5-lobed margin; at the circumference of the limb on the inside are 10 niches or pits, accompanied with corresponding prominences on the outside; in these depressions the anthers are found lodged at the time when the flower expands. Stamens hypogynous, bent outwardly, so as to lodge their anthers in the niches of the corolla, but liberating them during the period of flowering and striking against the sides of the stigma. Ovary roundish; style longer than the corolla and declinate; stigma obtuse. Capsule roundish, depressed, 5-celled, and 5-valved, with numerous small seeds. — Leaves poisonous to many animals; are reputed to be narcotic, but their action is feeble and unimportant. Bigelow states that the flesh of pheasants which have fed upon the young shoots is poisonous to man, and some cases of severe illness are on record which have been ascribed to this cause alone. The flowers exude a sweet honey-like juice, which is said when swallowed to bring on intoxication of a phrenitic kind, which is not only formidable in its symptoms but very lengthened in its duration. *Burnett.* — A brown powder which adheres to the shoots acts as a sternutatory.

GAULTHERIA.

Calyx 5-cleft or 5-toothed, bibracteate at the base, after flowering becoming large and succulent and covering the capsule with a baccate coating. Corolla ovate, ventricose, with a 5-cleft revolute border, transparent at the base. Stamens 10, enclosed, with flat filaments; anthers bifid at the apex; lobes biaristate. Hypogynous scales 10, usually united at the base. Ovarium half inferior. Capsule 5-celled, with a loculicidal dehiscence.

783. G. procumbens *Linn. sp. pl.* 565. *Bot. Rep.* t. 116. *Bigel. med. bot.* t. 22. — Sterile sand and gravel in mountainous forests in the driest situations in North America. "Partridge berry, Chequer berry, Box berry, Mountain tea," &c.

Rhizoma horizontal, woody, often ¼ of an inch in thickness. Branches ascending, but a few inches high, round and somewhat downy. Leaves scattered, near the extremities of the branches, evergreen, coriaceous, shining, oval or obovate, acute at both ends, revolute at the edge, and furnished with a few small serratures, each terminating in a bristle. Flowers axillary, drooping, on round downy stalks. Bracts 2, concave, heart-shaped. Calyx white, cleft into 5 roundish acute segments. Corolla white, urceolate, 5-angled, contracted at the mouth; the limb divided into 5 short, reflexed segments. Filaments white, hairy, bent in a semicircular manner to accommodate themselves to the cavity between the corolla and ovary; anthers oblong, orange-coloured, ending in 2 double horns, bursting outwardly for their whole length above the filaments; pollen white. Ovary roundish, depressed, 5-angled, resting on a reddish, 10-toothed, glandular disk; style erect, straight; stigma simple. Fruit a small, 5-celled, many-seeded capsule, invested with the calyx, which becomes large, round, and fleshy, having the appearance of a bright scarlet berry. —Fruit contains an aromatic, sweet, highly pungent volatile oil which is antispasmodic and diuretic. A tincture has been useful in diarrhœa. Coxe states that the infusion is useful in asthma. It is used in North America as tea; and brandy in which the fruit has been steeped is taken in small quantities in the same way as common bitters.

ARBUTUS.

Calyx small 5-parted. Corolla globose or ovate, with a small, contracted, 5-cleft, reflexed border. Stamens 10, inclosed, with flattened filaments; anthers compressed at the sides, dehiscing at the apex by 2 pores, fixed by the back beneath the apex, and there furnished with 2 reflexed awns. Stigma obtuse. Fruit succulent, granular, many-seeded, with a cartilaginous or papery lining to the cells.

784. A. Unedo *Linn. sp. pl.* 566. *Eng. Bot.* t. 2377. *Eng. Fl.* ii. 252. — South of Europe, West of Ireland, the Levant. (Strawberry Tree.)

A bushy tree, of very great size in Crete and the Levant; the young shoots often red, and rough with glandular hairs. Bark of the main stem reddish-brown, the external layers coming off in thin flakes. Leaves elliptic-lanceolate, unequally serrated, bright green, veiny, rigid, on hairy footstalks, without stipules. Clusters panicled, bent downwards, smooth. Bracteas oblong, solitary under each partial stalk, recurved. Flowers very elegant, of a greenish, semitransparent white, with a shade of red, destitute of scent. Berry crimson, the size of a cherry, very like a strawberry, covered with hard tubercles. *Smith.* — A wine is made from the fruit in Corsica, but it is reported to be narcotic, if taken in quantity.

ARCTOSTAPHYLOS.

Sepals 5, scale-like, green, spreading. Corolla ventricose, 5-toothed. Stamens 10, inserted round a plaited hypogynous disk; anthers opening by pores, with 2 awns at the apex. Fruit succulent, smooth, drupaceous; putamen many-celled; cells 1-seeded.

785. A. Uva ursi *Spreng. syst.* ii. 287. — Arbutus Uva Ursi *Linn. fl. lapp.* 162. t. 6. f. 3. *Woodv.* i. t. 70. *Eng. Bot.* t. 714. *Bigel. med. bot.* i. t. 6. — Barren gravelly hills and dry sandy woods in the north of Europe and America. (Bearberry.)

Stem woody, trailing, and rooting, the young shoots only turning upwards. Bark deciduous, and peeling off from the old stems. Leaves alternate, obovate, acute at base, attached by short petioles, coriaceous, evergreen, glabrous, shining above, paler beneath, entire, and in the young ones pubescent, the margin rounded, but scarcely reflexed. Flowers terminal, clustered. Pedicels reflexed, furnished at base with a short acute bract, and 2 minute ones at the sides. Sepals 5, roundish reddish and persistent. Corolla ovate or urceolate, white with a reddish tinge, transparent at base, contracted at the mouth, hairy inside, with 5 short reflexed segments. Stamens very slightly adhering to the base of the corolla; filaments hairy; anthers each with 2 horns and 2 pores. Ovary round; style straight, longer than the stamens: stigma simple. Disk a black indented ring. Fruit succulent, globular, depressed, deep red, approaching scarlet, with an insipid mealy pulp, and about 5 seeds, which cohere strongly together, so as to appear like the nucleus of a drupe. — Leaves astringent and rather bitter. Used in nephritic and calculous cases; of very doubtful action in the latter, but believed to be a decided palliative in nephritic paroxyms. Also employed in dysuria, catarrhus vesicæ, leucorhœa and gonorrhœa. Exhibited in the form of decoction and powder of the leaves. Its action is slow, and it therefore requires to be given for a considerable period; although the effects are uncertain they sometimes give astonishing relief. *Pereira.*

LOISELEURIA.

Calyx 5-parted. Corolla short, campanulate, 5-cleft. Stamens 5, equal, inclosed; cells of anthers bursting longitudinally. Style inclosed. Capsules 5-celled, 5-valved, with bifid pointed valves and a loculicidal dehiscence.

786. L. procumbens *Desv. journ. bot.* iii. 35. *R. and S.* iv. 353. — Azalea procumbens *Linn. fl. lapp.* xc. t. 6. f. 2. *Eng. Bot.* t. 865. *Torrey. fl.* i. 233. Chamœledon procumbens *Link. enum.* i. 210. — Mountains of Europe from Lapland to the Mediterranean, and on the White Hills, Catskill, and other mountainous ranges in North America.

A small evergreen shrub, resembling Thyme. Stems cæspitose, 3–4 inches long, branched, procumbent, rigid. Leaves opposite, elliptical,

very smooth and entire, coriaceous; margin revolute. Flowers in small terminal umbels, or corymbs; pedicels short. Calyx red; segments lanceolate. Corolla bright rose-coloured, small, as long again as the calyx; segments a little unequal, oblong. Stamens inserted into the base of the corolla; filaments flat, smooth; anthers 2-celled, subrotund, opening internally their whole length. Style rather shorter than the stamens, persistent; stigma capitate. Capsule ovate; margin of the valves inflexed. Seeds numerous, minute, smooth. *Torrey.* — Has the reputation of being useful as an astringent medicine.

VACCINACEÆ.

Nat. syst. ed. 2. *p.* 221.

VACCINIUM.

Limb of calyx 4–5-toothed. Corolla urceolate or campanulate, 4–5-cleft. Stamens 8–10, distinct, epigynous. Berry globose, 4–5-celled, many-seeded, surmounted by the remains of the calyx.

787. V. uliginosum *Linn. sp. pl.* 499. *Eng. Bot.* t. 581. *Fl. dan.* t. 231. *Eng. Fl.* ii. 220. — Boggy mountainous or moorland situations all over the northern parts of Europe. (Whortleberry.)

A small bush, with round branches. Leaves stalked, rather coriaceous, obovate, obtuse, or occasionally pointed, deciduous, glaucous beneath. Flowers several together, small, flesh-coloured; anthers horned. Berries large, blueish black, subacid. — The fruit is said to be narcotic and to be sometimes put into beer and other liquors to make them heady. The berries when fermented yield an intoxicating liquor.

PRIMULACEÆ.

Nat. syst. ed. 2. *p.* 223.

CYCLAMEN.

Calyx divided half way into 5 ovate segments, permanent. Corolla wheel-shaped; tube nearly globular, twice as long as the calyx, deflexed; limb many times longer than the tube, reflexed upwards, in 5 deep, lanceolate, oblique, equal segments; mouth open, naked, prominent at the circumference. Filaments very short, in the tube; anthers straight, acute, converging, in the mouth of the corolla. Style cylindrical, straight, rather longer than the tips of the anthers; stigma simple. Capsule globose, of 1 cell, opening at the top with 5 parallel teeth, the inside lined with pulp. Seeds numerous, somewhat ovate, angular, covering a central, roundish-ovate, stalked, unconnected receptacle. *Smith.*

788. C. hederæfolium *Willd. sp. pl.* i. 810. *Eng. Fl.* i. 273. — C. europæum *Eng. Bot.* t. 548. — Groves and fields in the southern parts of Europe. (Sow Bread.)

Root globular, brown, sending out many branched fibres. Leaves beautifully variegated with dark and glaucous green; their under side paler, purplish, with slightly glandular ribs. Footstalks round, more glandular; tapering and wavy at the base. Flowers pendulous, on naked wavy stalks, taller than the leaves. Corolla white, or flesh-coloured; purplish about the mouth. As the fruit advances, the flower-stalks curl spirally, and bury it in the earth. — A very acrid plant, especially the root, whose acrimony is not much perceived at the first tasting, but soon becomes intolerable. *Smith.* It has been used medicinally, its action being that of a drastic purgative, and formerly it was much esteemed as an emmenagogue; but whether its reputation was owing to its actual powers or to its placentiform root is doubtful. Its acrid principle has been considered to be a body sui generis, and named arthanitine. *Burnett.*

PRIMULA.

Calyx tubular, with 5 angles and 5 teeth, regular, erect, permanent. Corolla salver-shaped; tube cylindrical, as long as the calyx, or longer; limb spreading, in 5, rather deep, inversely heart-shaped, obtuse segments; throat concave, hemispherical, pervious. Filaments in the throat, very short, opposite to the segments of the limb; anthers pointed, erect, converging, not prominent. Style thread-shaped, the length of the calyx;

stigma globular. Capsule cylindrical, as long as the calyx, which invests it closely, of 1 cell, opening with 10 acute parallel teeth. Seeds numerous, roundish, covering a central, ovate-oblong, unconnected receptacle. *Smith.*

789. P. veris *Linn. sp. pl.* 204. *Eng. Bot.* t. 5. *Fl. Dan.* t. 433. *Eng. Fl.* i. 271. — P. officinalis *Jacq. misc.* i. 159. *Fl. Lond.* t. 15. — Meadow and pastures, especially in clayey soil. (Cowslip.)

Leaves hoary, more finely downy and soft than in either the Primrose or Oxlip, contracted in the middle, so as frequently to become heart-shaped, as it were, with winged footstalks; their margin wavy, as well as toothed. Flowers numerous, in 1 or more umbels, with small partial bracteas, on downy common stalks much taller than the leaves. Calyx downy. Limb of the corolla much smaller than in the Oxlip, concave, or cup-shaped; of a deeper yellow on the upper side, with 5 orange spots. *Smith.* — The flowers possess well marked sedative properties and make a pleasant soporific wine.

ANAGALLIS.

Calyx in 5 deep, spreading, acute, keeled segments, permanent. Corolla wheel-shaped; tube none; limb nearly flat, in 5 deep, roundish-ovate segments, contracted at their base. Filaments erect, slender, shorter than the corolla, clothed, in the middle part more especially, with prominent glandular hairs; anthers heart-shaped. Style thread-shaped; stigma capitate, or sometimes simple. Capsule globular, of 1 cell, thin and pellucid, splitting horizontally into 2 hemispherical valves. Seeds numerous, angular, abrupt, covering a large, central, orbicular, pitted, unconnected receptacle. *Smith.*

790. A. arvensis *Linn. sp. pl.* 211. *Eng. Bot.* t. 529. *Fl. Lond.* t. 12. *Eng. Fl.* i. 280. — Corn-fields and waste places all over Europe. (Pimpernel.)

Root small. Stem branched from the lower part, often dotted with purple, more or less procumbent, square. Leaves sessile, ovate, many ribbed; dotted with purple at the back. Flower-stalks angular, longer than the leaves, twisted and recurved after flowering. Segments of the calyx lanceolate, pointed, keeled, membranous at the edges. Corolla bright scarlet, with a violet-coloured mouth, closing at the approach of rain; its edges finely crenate, or minutely fringed with glands. Stamens purple, hairy, dilated and smooth at the base. Anthers yellow, heart-shaped. Style purple, permanent. Stigma capitate. Capsule pale and transparent, the size of a pea, separating all round, the valves marked with some indications of longitudinal separations, which seldom take effect. Seeds roughish, abrupt externally, each with a central dot. *Smith.* — This has had some reputation in cases of madness. It appears to possess energetic powers, for Orfila destroyed a dog by making him swallow 3 drachms of the extract; it was found to have inflamed the mucous membrane of the stomach. A similar result was obtained by Grenier. It has been prescribed in epilepsy and dropsy.

SAPOTACEÆ.

Nat. syst. ed. 2. p. 225.

BASSIA.

Sepals 4, coriaceous, permanent. Corolla campanulate, with a ventricose tube; limb 8-parted, nearly erect. Stamens half-inserted into the orifice and half into the tube of the corolla; anthers linear, sagittate, shaggy internally. Style subulate, longer than the corolla. Berry fleshy, 5-celled; seeds solitary.

791. B. longifolia *Linn. mant.* 563. *Willd. sp. pl.* ii. 842. *Gærtn. carp.* ii. t. 104.? *Roxb. fl. ind.* ii. 523. — Peninsula of India. (Illupie tree.)

A tree. Branches numerous, spreading far, and forming a very extensive, shady head; young shoots downy. Leaves crowded about the ends of the branchlets immediately above the peduncles, lanceolate, smooth, entire. Petioles from 1 to 2 inches long, round, slightly villous. Stipules ensiform, downy, very early caducous. Peduncles crowded round the base of the young villous shoots, 2–3 inches long, drooping, 1-flowered. The bractes, if any, fall so soon, and are so small, that I have not detected them. Calyx of 2 opposite pairs of ovate-oblong, rather acute, somewhat villous leaflets. Corolla; tube length of the calyx, gibbous, of a thick, firm, fleshy texture; border 8-cleft; segments sub-lanceolate. Filaments scarcely any. Anthers from 16 to 20, attached to the inside of the tube of the corolla. Ovary from 6 to 8-celled, with 1 seed in each cell, attached to the inner and under side. Style twice as long as the corolla. Stigma contracted, but evidently from 6 to 8-toothed. Berry oblong, the size of a large plum, villous, pulpy, when ripe yellowish, seldom more than 3-celled, 1-celled is more common; cells in the ovary, always from 6 to 8. Seeds solitary, oblong, of various shapes according to the number in the berries, attached to the lower half of the axis. Albumen 0. Embryo erect. Cotyledons conform to the seed. Radicle roundish, inferior. *Roxb.* — The fruit when pressed yields a large quantity of oil used in India for lamps, soap-making, and also for food. It is also employed medicinally to cure the itch, and other cutaneous disorders. The leaves boiled in water as well as the milk of the green fruit and bark are used in rheumatic affections.

792. B. butyraceæ *Roxb. in as. res.* viii. 477. and

793. B. latifolia *Roxb. corom.* i. 20. t. 19, the Madhuca tree, also yield a large quantity of oil, but they do not appear to be employed medicinally.

794. The Shea or Butter tree of Mungo Park is a species of

this genus. Burnett states, I know not on what authority, that much of the palm oil of commerce is yielded by species of Bassia, or other Sapotaceæ.

ACHRAS.

Sepals 6, ovate, concave, the innermost coloured. Corolla tubular, with an erect, 6-cleft limb; emarginate scales (sterile stamens) in the throat of the corolla. Filaments 6, short, inserted into the tube of the corolla; anthers cordate-sagittate, enclosed, alternate with the scales. Style subulate, longer than the corolla; stigma obtuse. Fruit apple-like, fleshy, 10–12-celled, usually with 3 only of the cells, containing seeds. Seeds solitary, compressed, oval.

795. A. Sapota *Linn. sp. pl.* 1190. *Jacq. amer.* 57. t. 41.—(*Browne jam.* i. 200. t. 19. f. 3.)—West Indies and neighbouring continent. (Sapodilla Plum.)

A tree abounding in thick white tenacious milk. Leaves oblong, acute at each end, entire, coriaceous, smooth, stalked, 3 or 4 inches long. Peduncles 1-flowered, short, axillary. Flowers scentless, whitish, hanging on the tree a long time, at first ovate, then campanulate as fecundation proceeds, and afterwards ovate again. Fruit variable in size and form, globose, oval, or ovate; its rind rough, brittle, dull brown; flesh dirty white, very soft and deliciously sweet. Seeds dark coloured, shining, very bitter. The fruit is only eatable when it begins to blett; in that state it is by many considered superior to the Pine-apple.—Bark a powerful astringent, and used with success as a substitute for Cinchona. The seeds, stripped of their skins, are considered by the people of Martinique powerfully diuretic; 6 seeds pounded in a mortar with a glass of wine or water form a draught which is given daily at a single dose in dysury, strangury, and similar disorders. If the dose is much increased, severe pains and even danger are brought on. *Jacquin.*

796. A. mammosa. *Linn. sp. pl.* 469 is said by Burnett to have an emetic milk, but I do not find authority for the statement.

EBENACEÆ.

Nat. syst. ed. 2. *p.* 226.

DIOSPYRUS.

Flowers polygamous. Calyx 3–4–6-parted. Corolla urceolate, quadrifid, with revolute segments. Stamens inserted into the base of the corolla; filaments very short, sometimes every other

one bearing 2 anthers; anthers subulate, fixed by the base. Style 4-cleft, sometimes 2-parted, often trifid. Fruit succulent, globose, 8-celled, with the permanent calyx at the base. Seeds solitary, compressed.

797. D. melanoxylon *Roxb. corom.* i. 36. t. 46. *Willd.* iv. 1109. *Roxb. fl. ind.* ii. 531. — Mountainous woods of Ceylon, Malabar, Coromandel, and other parts of India. (Ebony Tree.)

Trunk tolerably straight in large trees, from 20 to 25 feet to the branches, and about 8 or 10 in circumference. Bark scabrous, or deeply cracked, somewhat spongy, colour a mixture of grey and black, in irregular strata. Branches very irregular, numerous, rigid, forming a large spreading shady head: young shoots very downy. Leaves nearly opposite, short petioled, oblong, entire, obtuse, when young very downy, when old pretty smooth; about 4 inches long, and $1\frac{1}{2}$ broad. Stipules 0. Male peduncles axillary, single, short, bearing 3 or 4 small whitish flowers, supported by short bowing pedicels. Bractes a small one at the insertion of each pedicel, and 1 or 2, still smaller pressing the calyx. Calyx and corolla as in the genus. Filaments generally 12 or 13, short, inserted into a receptacle. Anthers linear, erect. Ovary 0. Hermaphrodite flowers rather larger than the male, axillary, single, nearly sessile. Bractes, a small one pressing the calyx. Calyx always 5-cleft, downy. Corolla 5-cleft. Filaments about 10, short, inserted into a receptacle between the ovary and flower. Anthers small, seemingly sterile. Styles 3, nearly erect; stigma bifid. Berry round, of the size of a small apple, yellow, pulpy. Seeds as many as 8, immersed in the pulp, kidney-shaped, sharp on the inner straight edge. *Roxburgh.*— The Ebony tree is valuable, not only on account of its wood, but for the sake of its bark which is astringent, and mixed with pepper is given for the dysentery by the native doctors of India.

798. D. virginiana *Linn. sp. pl.* 1510. *Mill. dict. ic.* t. 126. *Willd.* iv. 1107. — United States.

A large tree. Leaves ovate, rather blunt, shining, smooth, netted, with downy stalks. Leafbuds smooth. — Bark said to be a powerful astringent and febrifuge.

STYRACEÆ.

Nat. syst. ed. 2. *p.* 227.

STYRAX.

Calyx rather campanulate, nearly entire or 5-toothed. Corolla campanulate at the base, deeply 3–7-cleft. Stamens 6–16,

seldom 10, exserted; filaments united to the tube of the corolla, sometimes adhering at the base into a ring; anthers linear, 2-celled, opening by internal longitudinal slits. Style simple. Stigma obtuse, somewhat lobed. Drupe dry, splitting imperfectly into 2 or 3 valves, with 1–2–3 stones. Seed solitary, erect, with a large leafy thin embryo lying in the midst of fleshy albumen, with an inferior radicle.

799. S. officinale *Linn. sp. pl.* 635. *Cav. diss.* vi. 339. t. 188. f. 2. *Willd.* ii. 623. *Bot. rep.* t. 631. *Woodv.* t. 71. *Fl. Græc.* t. 375.— The Levant; Syria, Palestine; common all over Greece and the Peloponnesus.

A small tree with a smooth bark and downy shoots. Leaves alternate, ovate, green and smooth above, whitish with soft down underneath; with short downy stalks. Racemes terminal, downy, with angular pedicels. Calyx hoary, almost hemispherical, rather angular at the base; with 5–7 very short marginal teeth. Corolla white, externally hoary; with 5–6–7 segments. Fruit downy, with 1 or 2 nuclei.— — Storax, a fragrant resinous balsamic substance, is obtained in Asia Minor from the branches by incision; it is brownish red, friable, but soft and unctuous and is considered a stimulating expectorant, being supposed to influence the mucous membrane of the air passages. It is chiefly employed in affections of the organs of respiration. The tree does not form the secretion in this country.

800. S. Benzoin *Dryand. in Phil. trans. v.* lxxvii. 308. t. 12. *Woodv.* t. 72. — Benzoin officinale *Hayne.* — Sumatra, Borneo, Siam, Java.

Branches round, tomentose. Leaves alternate, stalked, oblong, perfectly entire, acuminated, above smooth, beneath tomentose, a palm long. Footstalks round, striated, channelled, tomentose, very short. Racemes axillary, compound, nearly the length of the leaves: common footstalks tomentose; partial alternate, spreading, tomentose. Pedicels very short. Flowers on one side. Calyx campanulated, very obscurely 5-toothed, outwardly tomentose; above a line in depth. Petals 5, (perhaps connate at the base) linear, obtuse, outwardly grey with very fine down, four times longer than the calyx. Filaments 10, inserted into the receptacle, rather shorter than the petals, beneath connate into a cylinder of the length of the calyx, ciliated on the upper part below the anthers. Anthers linear, longitudinally adnate to the petals, and shorter by half than they. Ovary superior, ovate, tomentose. Style filiform, longer than the stamens. Stigma simple. *Dryander.* — The resinous acrid substance called Benzoin is a secretion from the bark. It is a local irritant, its vapour causing violent coughing. It acts as a stimulant, more particularly as is supposed to the lungs. It is chiefly used in the manufacture of *paregoric elixir*, and in coating over the adhesive plaster called court plaster. It has been used in some uterine complaints, as chlorosis. A favourite cosmetic is *Virgin's milk*, which is prepared by mixing 1 drachm of the simple tincture of benzoin with 4 ounces of water. *Pereira.* — Constitutes the basis of Turlington balsam, whose very salutary effects, particularly in healing green and other wounds, is

well known to persons abroad who cannot always obtain surgical assistance. *Marsden.* I do not see upon what ground the genus Benzoin is distinguished from Styrax. Lithocarpus Benzoin, a name ascribed to Blume, has been abandoned by that author, who now calls a genus allied to Quercus by the name of Lithocarpus.

AQUIFOLIACEÆ.

Nat. syst. ed. 2. *p.* 228.

ILEX.

Calyx inferior, small, with 4 small teeth, permanent. Corolla wheel-shaped, in 4 deep, elliptical, spreading, concave, segments; or of 4 petals, cohering by their broad bases; much larger than the calyx. Filaments awl-shaped, shorter than the corolla, and alternate with its divisions. Anthers small, 2-lobed. Ovary roundish. Styles none. Stigmas 4, obtuse, permanent. Berry globular, of 4 cells. Seeds solitary in each cell, oblong, pointed, angular at the inside, rounded externally. *Smith.*

801. I. Aquifolium *Linn. sp.* 181. *Eng. Bot.* t. 496. *Eng. Fl.* i. 227. — Hedges and thickets in dry sandy places. (Holly.)

A handsome evergreen tree, of slow growth, with a smooth grey bark, which, abounding with mucilage, makes bird-lime, by maceration in water. The wood is hard and close-grained. Leaves alternate, stalked, rigid, shining, wavy, with spinous divaricated lobes; the upper ones on old trees entire, with only a terminal prickle. Flowers copious, white, tinged externally with purple; the earlier ones least perfect. Berries scarlet; casually yellow. — Dr. Rouseau asserts that the leaves are equal to Peruvian Bark in the cure of intermittent fever. The root and bark are said to be emollient, resolving, expectorant and diuretic. Haller recommends the juice of the leaves in icterus. Reil also affirms that he has employed the bark successfully in cases of epidemic intermittent fever when Peruvian Bark had failed. *Trans. of Med. Bot. soc.* 1834, p. 4.

802. I. vomitoria *Linn. sp. pl.* 709. *R. and S.* iii. 491. — Cassine Peragua *Mill. dict.* t. 83. f. 2. Ilex ligustrina *Jacq. ic. rar.* ii. t. 310. Ilex Cassena *Elliot.* ii. 681. (*Pluk.* t. 376. f. 2.) — Florida and Carolina near the sea.

A shrub 6–15 feet high, stoloniferous; branches virgate, erect, the smaller expanding; bark smooth, when very young pubescent. Leaves alternate, perennial, glabrous, shining, coriaceous. Flowers in axillary clusters; each peduncle 3-flowered. Peduncles short, slightly downy. Teeth of the calyx very minute. Segments of the corolla obtuse. Filaments shorter than the corolla. Berry globose, scarlet, 4-celled. — A strong decoction of this plant called *black drink* is used by the tribes of the Creek Indians at the opening of their councils. It acts as a mild emetic.

MYGINDA.

Calyx 4-parted, small, persistent. Petals 4, rounded, plane, spreading. Stamens shorter than the corolla. Style short, with 2–4 stigmas. Drupe globose, 1-celled, with a 1-seeded nut.

803. M. Uragoga *Swartz prodr.* 39. *Jacq. amer.* 24. t. 16. *R. and S.* iii. 501. — Carthagena, St. Martha near the coast.

An erect shrub, about 3 feet high on the coast, as much as 8 feet high in inland woods. Leaves ovate or lanceolate, acute, finely serrated, opposite or alternate, with short red stalks. Peduncles filiform, axillary, opposite, bifid, with each division 3-flowered. Flowers small, deep red. Fruit soft, red, the size of a small pea. — A decoction or infusion of the root a most powerful diuretic.

PRINOS.

Flowers polygamous. Calyx half 6-cleft, permanent. Corolla rotate, 6-parted. Filaments 6, subulate, erect. Style short, with an obtuse stigma. Berry with 6 stones.

804. P. verticillatus *Linn. sp. pl.* 471. *Bigel. med. bot.* iii. t. 56. *DC. prodr.* ii. 17. — Edges of streams and ponds in the United States. (Black Alder.)

A shrub, in growth irregular, but most commonly 6 or 8 feet in height. Leaves alternate or scattered, on short petioles, oval, acute at base, sharply serrate, acuminate, with some hairiness, particularly on the veins underneath. Flowers small, white, in little imperfect axillary umbels, which are nearly sessile. Calyx small, 6-cleft, persistent. Corolla monopetalous, spreading, without a tube, the border divided into 6 obtuse segments. Stamens erect, with oblong anthers; in the barren flowers they are equal in length to the corolla; in the fertile ones, shorter. Ovary, in the fertile flowers, large, green, roundish, with a short style, and obtuse stigma. Fruit bright scarlet, roundish, supported by the persistent calyx, and crowned with the stigma, 6-celled, containing 6 long seeds, which are convex outwardly and sharp-edged within. These berries are bitter and unpleasant to the taste, with a little sweetness and some acrimony. — Bark considered a valuable tonic especially in cases of great debility accompanied by fever; as a corroborant in anasarcous and other dropsies; and especially as a tonic in cases of incipient sphacelus or gangrene. Berries also reputed tonic, but Bigelow asserts that they are emetic.

*** The *Paraguay tea*, *Maté*, *Yapon*, or *Yerba de Palos*, called Ilex Paraguariensis by *Auguste de St. Hilaire*, Cassine Gongonha by *Von Martius*, and Myginda? Gongonha by *De Candolle*, is said by Von Martius to deserve notice as a diuretic.

CONVOLVULACEÆ.

Nat. syst. ed. 2. p. 231.

ARGYREIA.

Sepals 5. Corolla campanulate. Style 1. Stigma capitate, 2-lobed. Ovary 2-celled 4-seeded. Capsule baccate.

805. A. bracteata *Wall. cat.* No. 1419. *Choisy Convolv. or.* 30. *Compan. to Bot. Mag.* i. 38. t. 3. — Common near Madras.

A large twining, branched, milky shrub, the young shoots strigose. Leaves alternate, on long petioles, which are round, and furnished at the base with 2 thick oblong glands; limb broadly cordate-ovate, rather acute, entire, glabrous, dark shining green above, beneath strigosely hirsute, and somewhat silky. Peduncles axillary, rather longer than the petioles, dividing at the extremity into 2 or 3 branches, with a sessile ebracteated flower in the fork; each branch divides again in the same manner: the solitary flower in the second and all succeeding divisions furnished with a long, lanceolate, waved, pale green, hairy bractea. In this manner, what was at first an umbel, progressively becomes a panicle, bearing flowers and fruit in all stages, each of the pedicelled flowers having 3 bracteas closely appressed to the base of the calyx. Calyx of 5 ovate and mucronate hairy sepals. Corolla campanulate, externally hairy, of a purplish-white colour; within, near the bottom, deep-purple, becoming paler near the throat: limb spreading, cream-coloured. Stamens 5; filaments unequal, enlarged at the base. Ovary superior, seated in a yellow glandular cup-shaped disk. Style as long as the stamens. Stigma 2-lobed. Pericarp a 3- to 4-seeded berry, deep orange-coloured when ripe. Seeds imbedded in pulp. *Wight and Arnott.* — Decoctions of the leaves are used by the natives as fomentations in cases of scrophulous enlargements of the joints; the boiled leaves being employed as a poultice at the same time. Juice milky. *Wight.*

IPOMÆA.

Sepals 5. Corolla campanulate. Stamens included. Style 1. Stigma 2-lobed; the lobes capitate. Ovary 2-celled; cells 2-seeded. Capsule 2-celled.

806. I. Turpethum *RBr. prodr.* 485. *Bot. Reg.* t. 279. *Nees and Eberm. handb.* ii. 642. *Plant. med.* 105. *Choisy convolv. or.* 68. — Convolvulus Turpethum *Linn. sp. plant.* 221. *Roxb. Fl. Ind.* i. 476. — The East Indies, Malayan Archipelago, New Holland, Timor, Otaheite, Friendly Islands, Marianne Islands, Tinian, &c.

Roo perennial. Stems twining, several fathoms long, from 3 to 4 sided; a little downy, with winged angles. Leaves stalked, varying in

form from cordate to linear, all pointed, and lobed, or angular and downy. Peduncles axillary, downy, many-flowered. Flowers large, white. Bractes oval, concave, velvety, deciduous. Ovary seated on a large glandular disk. Stigma 2-lobed. Capsules involved in the dry calyx, absolutely 4-sided, 2-celled, opening at the apex by a kind of operculum. Seeds round, black, 1 in each cell. — The fresh bark of the root rubbed up with milk is used in India as a purgative. About 6 inches in length of a root as thick as the little finger is reckoned a dose.

807. I. macrorhiza *Mich. Fl. Bor. amer.* i. 141, supposed to be the Convolvulus Jalapa *Linn.*, a plant inhabiting the sandy soil of Georgia and Carolina, with white insipid farinaceous roots weighing from 40 to 50 lbs., is asserted by Elliott (sketch i. 253.), to possess no purgative properties whatever. Dr. Baldwin assured him that he had administered 6 drachms of the powdered root without effect, and that in fact it contains little or no resin, but like the Batatas consists chiefly of saccharine and farinaceous matter.

808. I. pandurata. — Convolvulus panduratus *Linn. sp. pl.* 219. *Barton mat. med.* i. t. 23. — Common in North America in sandy fields and by fences from Canada to Florida; "Mechameck" of the Indians.

Root very large, 2 or 3 feet long and as thick as the arm, of a yellow-ochre colour. Stem downy. Leaves on long stalks, broadly cordate, entire, acuminate, slightly repand. Peduncles many-flowered, cymose, longer than the petioles. Corolla large, campanulate, white, dull purple towards the base. Stamens white, the length of the tube. — The powdered root acts like rhubarb; it requires to be given in larger doses than jalap. It has an American reputation as a remedy for calculous affections, and in cases of gravel.

809. I. Purga *Wenderoth in litt. ad Zuccar. Schlecht. in Linnæa* viii. 515. — I. Schiedeana *Zuccarini Plant. nov. fasc.* i. 293. t. 12. I. Jalapa *Nutt. in Am. journ. med. sc.* v. 300. Purga *of the natives of Jalapa.* Laschachne, Tetonpactle *Mexicans.* — On the eastern declivity of the Mexican Andes near Chiconquiaco and near San Salvador on the eastern face of the Cofre de Perote, at an elevation of about 6000 feet above the sea. The mountains near Orizaba.

Root tuberous, fleshy, with numerous roundish tubercles. Stem smooth, brownish, very slightly rough. Leaves stalked, the first hastate, the succeeding ones cordate acuminate, mucronate, smooth. Peduncles axillary, 2-flowered, twisted, the length of the corolla. Sepals obtuse, mucronate, smooth. Corolla purple, with a long somewhat clavate tube, and an undulated limb, with 5 plaits. Filaments smooth; unequal, longer than the tube of the corolla; anthers linear, projecting. Stigma capitate, deeply furrowed. Capsule 2-celled; cells 2-seeded. — From the statements of Dr. Schiede, and others, confirmed by an unpublished letter in the possession of the Horticultural Society of London, from Don Juan de Orbegozo, a pupil of Cervantes, residing at Orizaba, it

appears certain that this plant furnishes the jalap of commerce. It is however equally certain from the information furnished by the latter gentleman that the following species is considered by the traders in jalap to be extremely similar in quality, and as "it is the more abundant and larger of the two, at least in some districts," the probability is that it also forms a part of the imported samples of this drug.

810. I. orizabensis *Pelletan Journ. chim. med.* vol. x. p. 1. — Jalapa Macho *of the Mexicans.* — In temperate parts of the state of Oaxaca.

Root tuberous, fleshy, with numerous oblong tubercles. Stem twining, green, hairy. Leaves cordate acuminate mucronate, hairy, the earliest ones hastate. Peduncles 2–3-flowered, twisted, 3 times as long as the corolla. Sepals oblong, obtuse, mucronate, hairy. Corolla purple, campanulate, with a regular tube inflated in the middle, and a wavy limb with 5 plaits. Stamens shorter than the tube; hairy at the base. Capsule 2-celled; cells 2-seeded.—This description, as well as the last, is taken from Don Juan de Orbegozo's letter. I presume that this second sort of jalap is the Convolvulus Orizabensis of Pelletan, as quoted by Mr. Pereira in the Med. Gaz. xx. p. 932. Dr. Schiede had heard of it under its Spanish name of Jalapa Macho or Purga Macho, or Male Jalap, but he had only seen the root, which appears very like that of I. Purga.

811. The slightly purgative Mechoacan root of Mexico is possibly produced by some species of this genus; but the Convolvulus Mechoacannus of Willdenow or the Ipomæa Mechoacanna of Nees and Ebermaier is too little known to be described. Wood and Bache refer it to I. macrorhiza No. 807.

812. I. operculata *Martius* (Jeticucu *Piso bras.* 93.) is said by Guibourt to furnish a part of the Mechoacan of commerce, but I do not find it described.

813. I. tuberosa *Linn. sp. pl.* 227. *Lunan Hort. Jam.* i. 400. — *Sloane nat. hist. jam.* i. t. 96. f. 2. — Jamaica, where it is called Seven-eared or Spanish arbour vine.

Root tuberous, as large as the human head. Stems 200 or 300 feet long, purplish at the extremities. Leaves smooth, downy beneath, palmate, or 7-lobed; the lobes much smaller at the side than in the middle, narrow-lanceolate, acuminate. Peduncles many-flowered. Flowers pale yellow, sweet-scented. Capsule as large as a walnut, membranous, shining, brown, 2-celled, with 2 black or dark brown shaggy triangular seeds in each cell. — All the parts purgative. Dr. Barham thinks scammony might be obtained from it.

814. I. cathartica *Poiret encycl. meth. suppl.* iv. 633. — Convolv. africanus *Nicols. nat. hist. of St. Domingo* 260. — Moist places in St. Domingo.

Stems twining, smooth, herbaceous. Leaves large, distant, long-stalked, broad, oval, cordate, smooth, 3-lobed; the 2 lateral lobes oval, shorter, acute; the terminal oval-lanceolate, acuminate. Peduncles axillary, usually 1-flowered. Flowers large, bright deep red. Tube of the corolla thick, inflated, contracted and cylindrical at the base, an inch and more long, pale green; the limb broad, 5-lobed. Stamens shorter

than the corolla. Stigma capitate. — The roots furnish a resinous substance used as a purgative in St. Domingo. Its use is not however very safe, as it is apt to produce super-purgations.

BATATAS.

Sepals 5. Corolla campanulate. Stamens included. Style 1. Stigma capitate, 2-lobed. Ovary 4-celled; cells 1-seeded. Capsule 4-celled, or by abortion 3-celled.

815. B. paniculata *Chois. conv. or.* 54. — Convolvulus paniculatus *Linn. sp. pl.* 223. *Roxb. fl. ind.* i. 478. Ipomæa paniculata *Bot. Reg.* 62. Ipomæa insignis *Bot. Repos.* t. 636. *Bot. Reg.* t. 75. *Bot. Mag.* t. 1790. — East Indies, New Holland, Java, Africa, Tropics of America, in hedges and thickets.

Root perennial, tuberous. Stems and branches perennial; young shoots round and smooth. Leaves stalked, palmate, from 3 to 6 inches each way; the lobes generally 5, divided little more than half way down, broad-lanceolate, entire, smooth. Peduncles axillary, erect, as long as the petioles, umbellate. Flowers numerous, large, of a beautiful dark reddish purple. Capsules 4-celled. Seeds woolly, all round. — The large tuberous root is cathartic and is used as such by the natives of the places where it grows.

PHARBITIS.

Sepals 5. Corolla campanulate or campanulate-funnel-shaped. Style 1. Stigma capitate, granular. Ovary 3-celled or rarely 4-celled; cells 2-seeded.

816. P. Nil *Chois. convolv. or.* 57. — Convolvulus nil *Linn. sp. plant.* 219. Ipomæa cærulea *Roxb. fl. Ind.* i. 501. *Bot. Reg.* t. 276. — All over the tropics, everywhere; various parts of the East Indies; South Sea Islands.

Stems and branches twining, annual, round, hairy, from 6 to 12 feet long, as thick as a crow's quill. Leaves stalked, broad, cordate, 3-lobed, downy; from 2 to 4 inches long, acute. Peduncles axillary, the length of the petioles, round, hairy, from 2 to 3-flowered. Bracts and sepals linear. Flowers large, of a beautiful light, but bright blue. Stigma sub-globose, large, glandular, 3-lobed. Capsule much shorter than the calyx, smooth, 3-celled, with 2 seeds in each cell. — Seeds sold in apothecaries' shops of Calcutta, under the name of "Kala dana," as a purgative. Said to be an effectual quick cathartic. Seeds are roasted like coffee, powdered, and administered in doses of from 30 to 40 grains, in any convenient vehicle. *Roxb.*

CONVOLVULUS.

Sepals 5. Corolla campanulate. Style 1. Stigmas 2, linear-cylindrical, often revolute. Ovary 2-celled, 4-seeded. Capsule 2-celled.

817. C. Scammonia *Linn. sp. pl.* 218. *Woodv. med. bot.* i. t. 5. *Flora Græca* t. 192. *Nees and Eberm. handb.* ii. 633. *plant.*

med. t. 195. — Hedges and bushy places in Greece and the Levant.

Root perennial, fusiform, very long, fleshy, with an acrid cathartic juice. Stems numerous, annual, branching, slender, round, smooth, twining, very slightly angular near the ends. Leaves stalked, sagittate oblong, acute, entire, quite smooth, truncate and angular at the base, with acute spreading lobes. Peduncles solitary, 3-flowered, scarcely twice so long as the leaves. Sepals rather lax, smooth, ovate, repand, obtuse with a reflexed point, coloured at the edge. Corolla very much expanded, pale sulphur yellow, thrice as long as the calyx, an inch and more in length. Stamens erect, converging, thrice as short as the corolla. Style the length of the stamens; stigmas oblong, erect, parallel, distant, white.—The hard brittle ash-coloured resin called Scammony is obtained from the roots of this plant, which however according to Sibthorp is not the Σκαμμωνια of Dioscorides, which he refers to Convolvulus farinosus *L.* The quality of the drug is so extremely uncertain that the gatherers have been supposed to collect different species of Convolvulus, instead of the genuine one. But it appears from the reports of the Smyrna merchants that this is not the case. The roots of young plants produce a less active juice than old ones, and the colour of the Scammony is more or less intense according as the plants grow in sunny or shady places; but the quality of the resin is not considered to be affected by this circumstance. The difference in samples proceeds principally from the manipulations of the Jews, and the greater or less care of the peasants in collecting the drug. Upon what ground Dr. Sibthorp referred the Scammony of Dioscorides to Convolvulus farinosus of *Linn.* a Madeira plant with slender roots, and no appreciable quantity of resin, cannot now be ascertained, for there is no specimen of the supposed C. farinosus in his herbarium. It is however certain that Sibthorp was under a mistake, and that Aleppo Scammony has nothing to do with the Madeira species. Dioscorides describes Scammony as having κλῶνας ἐμφαίνοντάς τι δασύτητος according to the usual reading, and this certainly does not agree with Convolvulus Scammonia, and would apply better to the Convolvulus sagittifolius *Fl. Græc.* t. 193, found in Samos and other islands of the Archipelago; but we know nothing of this plant producing any thing like Scammony. It is more probable that the text of Dioscorides is corrupt, and that the reading in the Aldine edition of 1499 of παχύτητος for δασύτητος is more genuine; in which case the description of this ancient author suits Convolvulus Scammonia.

818. C. althæoides *Linn. sp. pl.* 222. *Fl. Græca* t. 194. *Bot. Mag.* t. 359. — South of Europe, North of Africa, Levant, climbing among bushes.

Rootstock creeping, slender. Herbage glaucous, very hairy. Stems branched from the bottom, climbing or spreading, taper, leafy. Lower leaves long-stalked, cordate, obtuse, crenate, repand or somewhat lobed; the upper longer, shorter stalked and deeper divided, pedatifid, with oblong, entire, obtuse segments. Peduncles axillary, longer than the leaves, 1- or occasionally 2-flowered, with a pair of bracts near the upper end. Sepals hairy, ovate, erect. Corolla very much spreading, about 2 inches long, beautiful bright rose-colour. Stigmas 2, spreading.

Capsule orbicular, mucronate, smooth, 3-seeded. — According to M. Loiseleur Deslongchamps the roots contain a purgative resin in doses of from 15 to 24 grains.

CALYSTEGIA.

Two opposite bracts enveloping the flower. Sepals equal. Corolla campanulate. Style 1. Stigma 2-lobed, with linear or oblong cylindrical lobes. Ovary 2-celled, with so short a dissepiment that it is 1-celled at the apex.

819. C. sepium *RBr. prodr.* 483. *Lindl. synops.* p. 167. — Convolvulus sepium *Linn. sp. pl.* 218. *Eng. Bot.* t. 313. *Fl. Lond.* t. 13. — Common in hedges and among bushes all over Europe, the Caucasus, the banks of the river St. Lawrence in North America.

Root long, creeping, rather fleshy. Stems long, angular, twining. Leaves smooth, stalked, sagittate, obtuse or truncate or lobed at the base. Flowers large, solitary, usually white; on an angular peduncle longer than the petiole. Bracts cordate, acute, smooth, longer than the calyx, not more than half the length of the corolla. — Root purgative like Scammony but much less active.

820. C. Soldanella *Römer and Schultz syst.* iv. 184. *Lindl. synops.* p. 167. — Convolvulus Soldanella *Linn. sp. plant.* 226. *Eng. Bot.* t. 314. — A common but beautiful ornament of the sea shore in most parts of Europe; also on the coast of the Euxine.

Root creeping. Stems smooth, rather fleshy, procumbent, spreading, not very long, and not twining. Leaves reniform, smooth, rather fleshy, sometimes cordate and angular. Flowers bright pink, very fugitive, opening only in the sunshine, solitary, on an angular peduncle longer than the petioles. Bracts ovate, shorter than the calyx. Stigmas short, subulate. — The root is purgative; it contains according to Mr. Planche 24 per cent. of a green purgative resin.

BREWERIA.

Sepals equal. Corolla campanulate. Style 1, divided in two. Stigmas capitate. Ovary 2-celled, with 2 ovules in each cell. Capsule 2-celled.

821. B.? scoparia — Convolvulus scoparius *Linn. suppl.* 135. *Fée cours.* ii. 409. *Nees and Eberm. handb.* ii. 635. *plant. med.* 196. — Teneriffe about the town of Santa Cruz; the Isleta of the Grand Canary and elsewhere.

A shrub with the aspect of a Genista or a Spartium. Stem round, quite smooth. Branches erect, simple, with distant scattered leaves. Leaves linear, somewhat downy, erect. Peduncles solitary, remote, usually 3-flowered, seldom 1-flowered. Sepals silky, ovate, acute. Corolla white, hairy externally. Styles 2. Stigmas capitate. — Wood perfumed, smelling strongly of roses, yellowish fawn colour veined with

red, burning readily when lighted. Taste bitter, balsamic. Yields by distillation an essential oil of bitter balsamic flavour; little used, except, according to Feé for adulterating oil of Roses. (Lignum rhodium *Officin.*) N.B. This plant is said (*Röm. and Sch.* iv. 300.) to have a 1-celled 1-seeded capsule opening at the base. If so it is not more a Breweria than a Convolvulus. But it is so extremely like a Breweria found in Arabia by Fischer (No. 53.) that I cannot but suspect some mistake in this point.

HYDROLEACEÆ.

Nat. syst. ed. 2. *p.* 234.

HYDROLEA.

Calyx 5-parted. Corolla somewhat campanulate. Anthers 5, included, sagittate; filaments dilated at the base. Styles 2; stigmas truncate. Capsule 2–3-celled, many-seeded.

822. H. zeylanica *Vahl. symb.* ii. 46. *Wight and Arn. in Comp. Bot. Mag.* ii. 193. t. 26. — Nama zeylanica *Linn. sp. pl.* 327. *fl. zeyl.* 117. t. 2. Steris javana *Linn. mant.* 34. Steris aquatica *Burm. Ind.* 73. t. 39. f. 3. — Water, and marshy ground in the East Indies.

Herbaceous. Stems erect, towards the extremities variously bent, decumbent, and sometimes rooting near the base, round, glabrous, somewhat flexuose. Leaves short, petioled, lanceolate, rather obtuse, smooth, bright green above, below marked with numerous prominent parallel veins. Racemes axillary, somewhat leafy, spreading, few-flowered; every part of them, raches, pedicels, and calyx, glanduloso-pubescent. Pedicels 1-flowered, usually opposite to a small bracteal leaf; but sometimes a little either above or below the opposed leaf, rarely axillary. Flowers deep blue, with a white spot in the centre. Calyx 5-parted; divisions lanceolate, acute, nearly as long as the corolla, thickly covered with glandular hairs. Corolla wheel-shaped; tube short; limb 5-cleft; divisions obtuse, spreading, or even somewhat reflexed when fully open. Stamens 5, alternate with the segments of the corolla. Filaments the length of the tube, attached to it by a dilated base. Anthers large, sagittate. Ovary superior, 2-celled: styles 2, diverging, about the length of the stamens, dark-blue, with paler capitate stigmas. Capsule inclosed in the permanent calyx, 2-celled, many-seeded. Seeds growing all round a large fleshy receptacle, which forms part of the partition. *Wight and Arnott.* — The leaves beaten into pulp and applied as a poultice are in India considered efficacious in cleaning and healing ill conditioned ulcers, particularly those in which maggots have begun to breed. *Wight.*

LOBELIACEÆ.

Nat. syst. ed. 2. *p.* 235.

LOBELIA.

Limb of calyx 5-parted. Corolla irregular, tubular; the tube slit on the upper side and ventricose at base; the limb bilabiate. Filaments syngenesious; anthers either all bearded, or the two lower only. Capsule 2-celled, 2-valved, many-seeded, dehiscing at the apex.

823. L. inflata *Linn. sp. pl.* 1320. *Bigelow med. bot.* i. t. 19. *Sweet fl. garden* 99. — An annual, found in fields and road sides in the United States. (Indian Tobacco.)

Height from 6 inches to 2 or 3 feet. The small plants are nearly simple, the large ones much branched. Root fibrous. Stem erect, in the full-sized plant much branched, angular, very hairy. Leaves scattered, sessile, oval, serrate, hairy. Spikes or racemes peduncled, each from the axil of a small leaf. Segments of the calyx subulate. Ovary oblong, striated. Corolla bluish purple; the tube prismatic and cleft above, the segments spreading, acute; the 2 upper ones lanceolate, the 3 lower ones oval. Anthers collected into an oblong, curved body, purple; filaments white. Style filiform; stigma curved and inclosed by the anthers. Capsule 2-celled, turgid, oval, compressed, 10-angled, crowned with the calyx. Seeds numerous, small, oblong, brown. — An acrid narcotic, and most powerful emetic. Used in asthma, with great advantage. In small doses it is expectorant and diaphoretic, exciting expectoration without the pain of coughing. In such doses as a common tea spoonful of the seeds and leaves, in which quantity irregular practitioners have ventured to give it, it frequently proves fatal in 5 or 6 hours. It has been used instead of Tobacco, in the form of enema, in strangulated hernia.

824. L. siphilitica *Linn. sp.* 1320. *Jacq. ic. rar.* iii. t. 597. *Woodv.* t. 63. *Bot. Reg.* t. 537. — United States.

A bright but rather pale green perennial, growing about 2 feet high. Stem erect, angular, very slightly hairy. Leaves ovate-oblong, acute at each end, rather wavy, unequally serrated, slightly hairy. Raceme terminal, leafy, cylindrical, dense. Peduncles bracteolate, hairy, shorter than the acuminate hairy bracts. Calyx leafy, with ovate, acuminate hairy segments, half as long as the tube of the corolla and reflexed at the sinus. Corolla deep blue in the tube, paler in the limb, the lower lip of which is convex and white at the base; all the segments ovate and acute. Tube of the stamens deep blue, elevated through and beyond the dorsal slit of the corolla. — The whole plant has a rank smell. Its root is acrid and emetic, and has been used as a remedy for

syphilis; it has the reputation of acting as a speedy cure for this disease, but European practice does not confirm its American reputation. Are not its curative principles volatile?

HIPPOBROMA.

Limb of calyx 5-parted, with linear segments. Tube of corolla long, straight, entire; limb 5-parted, nearly equal. Stamen-tube projecting, completely monadelphous and syngenesious: stigma 2-lobed. Capsule 2-celled, 2-valved, many-seeded.

825. H. longifolia *Don. gen. syst.* iii. 717. — Lobelia longiflora *Linn. sp.* 930. *Jacq. amer.* 219. *Bot. reg.* t. 1200. Rapuntium longiflorum *Mill. dict.* No. 7. Isotoma longiflora *Presl. mon. lobel.* 42. — St. Domingo, Cuba, Jamaica and Martinique, in damp places and by the side of streams.

An annual, about a foot high, very slightly downy, pale bright green. Leaves obovate-lanceolate, coarsely toothed, tapering into a broad winged toothed petiole. Flowers axillary, solitary, nearly sessile. Calyx angular, turbinate, with 5 linear acuminate hairy teeth. Corolla white; tube about 3–4 inches long, cylindrical, dilated at the base, hairy; limb nearly equal, spreading, with linear-lanceolate rather acute segments. Anthers smooth. Capsule inflated, 2-celled, opening at the apex. — One of the most venomous of known plants. Taken internally it brings on fatal hypercatharsis. If any of the juice touches the lips or eyes it produces violent burning inflammation. Horses are said to burst after feeding on it, whence the Spanish West Indians call it *Rebenta Cavallos.*

826. Tupa Feuillæi *Don. gen. syst.* iii. 700. — Lobelia Tupa *Linn. sp.* 1318. *Bot. Reg.* t. 1612. Rapuntium Tupa *Presl. monogr. lobel.* 28, has similar properties to the last plant; its very flowers are said to produce vomiting by their smell.

CINCHONACEÆ.

Nat. syst. ed. 2. *p.* 243.

Tribe I. Cinchoneæ.

Fruit capsular, 2-celled; cells many-seeded. Seeds winged. Albumen fleshy. — Trees or shrubs. Leaves opposite. Stipules interpetiolar. DC.

UNCARIA.

Limb of calyx short, urceolate, 5-cleft. Corolla funnel-shaped; tube slender; throat naked; lobes 5, spreading, oval oblong; anthers enclosed or protruded. Style filiform, protruded, stigma tumid undivided. Capsules pedicellate, clavate, tapering to the base. Seeds numerous, imbricated, winged. — Climbing shrubs. Peduncles when old becoming axillary compressed hooked spines. Flowers in loose heads.

827. U. Gambir *Roxb. fl. ind.* i. 517. *DC. prodr.* iv. 347. — Nauclea Gambir *Hunter in linn. trans.* ix. t. 22. *As. res.* xi. 187. (*Rumph.* v. t. 34. f. 2 and 3.) — Islands of the Indian Archipelago.

Leaves opposite, short-stalked, from ovate-oblong to ovate-lanceolate, entire, acute; smooth on both sides; about 4 inches long and 2 broad; stipules oblong, uniting the upper margin of the base of the petioles, deciduous. Spines axillary, solitary, or in opposite pairs, simple, recurved, hooked. Peduncles axillary, solitary, about the middle jointed and bracted, supporting a single globular head of beautiful green and pink, small florets. Bracts about the middle of the peduncle, forming a 3–4-cleft annular involucre. Calyx silky on the outside with a 5-cleft border. Tube of the corolla filiform; border of 5 obtuse divisions, villous on the outside, and hairy in the centre of the inside. Filaments short. Anthers large, on the mouth of the tube. Ovary turbinate, sub-sessile, sericeous. Style as long as the tube of the corolla. Stigma clavate. Capsules stalked, clavate, longitudinally grooved, crowned with the 5-cleft permanent calyx, 2-celled, 2-valved. Seeds numerous, imbricated, winged. — An extract called *Gambier* is prepared by the Malays from the leaves of this shrub; with some sweetness, it has a more astringent taste than *Terra Japonica*. Roxburgh considered it one of the drugs, if not the only one, formerly called by that name in Europe. The extract is chewed by the natives with Betle leaf and Areca; the leaves are chewed to relieve aphthous eruptions of the mouth and fauces. Mr. Pereira considers this Gambier not to form any of the Kinos of the shops, but to be one of the substances called Catechu in commerce. *Med. gaz.* xviii. 790.

COUTAREA.

Tube of calyx turbinate; limb 6-parted. Corolla funnel-shaped, with a short tube, and a bluntly 6-lobed ventricose limb. Stamens inserted in the bottom of the throat; anthers linear, exserted. Capsule coriaceous, obovate, compressed; valves bifid at the apex. Placentæ fungous, eventually nearly free. Wings of seeds membranous. — American trees. Leaves ovate. Flowers large showy.

828. C. speciosa *Aubl. guian.* i. 314. t. 122. *DC. prodr.* iv. 350. — Portlandia hexandra *Jacq. amer.* 63. t. 182. f. 20. *Swartz. fl. ind. occ.* i. 385. — Guayana, Cayenne, Trinidad, Spanish Main.

An upright shrub, about 6 feet high according to *Jacquin*; sometimes 25 feet high with a trunk a foot in diameter, according to *Aublet*. Leaves ovate, entire, bluntly acuminate, veiny, smooth, stalked, opposite, about 5 inches long. Peduncles 3-flowered. Flowers sweet-scented, numerous, showy, pink outside, white and striped inside (purplish-violet *Aublet*). Tube of the corolla very long, globose at the base: limb 6-parted, with ovate, flat, spreading segments 3 times shorter than the tube. — The *Bark* of French Guayana is said to be procured from this shrub; its properties are similar to those of Cinchona; but neither Aublet nor Jacquin mention this.

CINCHONA.

Calyx 5-toothed. Corolla hypocrateriform, with a 5-parted limb, valvate in æstivation. Anthers linear, inserted within the tube, and not projecting, unless in a very slight degree. Capsule splitting through the dissepiment into 2 cocci open at the commissure, and crowned by the calyx. Seeds girted by a membranous lacerated wing.

*** This is probably the most important genus in the whole of Botanical Materia Medica, as it has certainly been the source of more disputing, confusion, misapprehension and misrepresentation than any other medico-botanical question. The bark furnished by different species is so exceedingly dissimilar in quality, and the consumption of it is so enormous, that it has become a point of the greatest importance to ascertain whence the finest qualities are to be procured, and how to avoid the inconvenience sustained by importations of a bad article. Many a merchant has sustained heavy losses by adopting the errors of those who have written on the subject. It is asserted by one class of writers that the barks of New Grenada, exported from Carthagena are the same as those of Peru which reach Europe by way of Lima; others declare that the Carthagena barks are entirely different from those of Lima, and comparatively worthless. On the one hand we have the College of Physicians in the new edition of their Pharmacopœia ascribing the yellow, pale and red barks of the shops to the species described under the names of C. cordifolia, lancifolia and oblongifolia in Mr. Lambert's Illustration of the genus; on the other we have such eminent pharmacologists as Pereira, Guibourt, and Wood and Bache

declaring not only that those species do not yield the barks employed in European practice, but that the bark they do yield is so inferior as to be valueless in pharmacy, a difference productive of no small embarrassment to the merchant who imports barks for medical use. Even in the mere physiological part of the question we have one writer asserting that bark of the best quality is obtained from the trunk and oldest branches of the Cinchona trees, and another as positively assuring us that "the bark of old trees, and especially those of the trunk and larger branches form a sort of Quina Peruviana, much inferior in efficacy to that from the suckers, and younger or middle-sized branches." As to Botanical differences regarding the distinctions of species, the subject is if possible still more embroiled. Some writers would have us believe that the Cinchonas form an exception to all known rules, and that the most dissimilar trees, inhabiting the most opposite climates, are either identical, or mere varieties of each other; while others have maintained that the number of species is very considerable, and that the differences between them in structure are accompanied by most important distinctions in the value of their bark.

I need not say that under these circumstances it became necessary to look at the genus Cinchona, in preparing an account of it for this work, with a much more critical eye than would have been necessary had the opinions and statements of writers been less conflicting. Fortunately there exists in this country more complete Botanical evidence concerning the genus than in any other part of Europe. My friend and colleague Dr. A. T. Thomson, Professor of Materia Medica in University College, has a most extensive series of dried specimens taken out of a Spanish prize during the war; and Mr. Lambert is the fortunate possessor not only of a nearly complete set of the species described in the Flora Peruviana, obtained from Madrid, but of several unpublished species, and also of a MS. *Compendio historico-medico comercial de las Quinas*, from the pen of Don Hippolito Ruiz. All these have been unreservedly placed at my disposal for examination by their respective possessors, to whom I beg leave thus to offer my sincere thanks.

Of course I have considered the question botanically, not pharmaceutically, except so far as to determine if possible the real origin of the barks known in trade and used in the shops. Even this has obliged me to extend the account of the genus very much beyond the limits within which I had wished to confine it in the present work; but I have felt that if I hoped my opinions to carry any weight with them, that result could only be obtained by showing in sufficient detail upon what evidence they are founded. It has been my anxious wish to take the most dispassionate view of the conflicting opinions that have necessarily been brought under consideration, and it is no little satisfaction to me to find that the result of my Botanical inquiries coincides very closely with the conclusions of the best modern pharmacologists.

It appears to me that most of the confusion which has been introduced into the history of the genus Cinchona, has arisen from the world having formed a false estimate of the Botanical skill and consequent credibility, of the most original writers upon the subject. It is so essential to a just estimate of the value of evidence that this should be better understood, that I feel obliged to occupy a page or two with remarks upon that point, by way of introduction to the account here given of the species and their products.

Don Jose Celestino Mutis, a Spanish Botanist living at Santa Fé de

Bogota, having discovered forests of Cinchona about that city in the year 1772, called the attention of his government to that important fact, sent specimens to Linnæus, subsequently received official charge of the Cinchona woods from the Viceroy of Santa Fé, and thus became of great authority in the eyes of European Botanists in all that relates to the species producing the barks of commerce. Baron Humboldt, who knew him personally, speaks of him in terms of great commendation for his zeal, knowledge, and disinterestedness. Nevertheless it appears to me, as it also has to M. Guibourt (*Hist. des drogues*, ed. 3. ii. 46.), that Mutis has more embroiled the history of this valuable drug, and introduced a greater number of false ideas concerning the quality and origin of its various samples, than all the writers upon the subject since its first discovery. He asserted that the barks of Santa Fé were the same as those of Peru, and thus led the merchants of Europe to purchase at Carthagena, the sea-port for the Kingdom of Santa Fé, barks similar indeed in name to those of Loxa, Lima and La Paz, but resembling them in nothing else. The *red bark* of Mutis is nothing more than the bad sort now called *Quina nova*, his *yellow bark* has nothing to do either in quality or origin with *C. Condaminea*, *nitida* and others which are really possessed of valuable properties, but is in all probability yielded by *C. cordifolia*, and is what is now named *Carthagena bark;* while his *Quina blanca* produced by *C. macrocarpa*, and which is quite inert, has no Botanical connection with the bark of that name from Loxa (See *Guibourt* ii. 47.). Finally his *orange bark*, or *Quina naranjada*, so far from equalling the valuable *Calisaya* of La Paz is according to Ruiz of second quality only, and according to Guibourt extremely fibrous and of the worst description. Humboldt speaks with indignation, of a large quantity of the *Quina naranjada* which had been collected by Mutis at a great expense, having been burnt as worthless, and ascribes the act to mercantile cunning, but I am disposed with M. Guibourt rather to regard the occurrence as a proof of the good sense, and knowledge of the King of Spain's advisers. It appears that this *Quina naranjada* is of no value whatever, being what Mr. Pereira calls *New Spurious Yellow Bark*. It is however in the highest degree uncharitable to impute to Mutis any thing more than excessive zeal for the prosperity of his province; and in fact it isa pparent from the following circumstance that his want of correct Botanical discrimination was sufficient to lead him unintentionally into the errors he committed. A great deal has been said about specimens of Cinchonas sent by Mutis to Linnæus. I have examined those specimens. Those in the herbarium of Linnæus himself consist of loose dried flowers of two different species, one of which is *C. pubescens*, the other I did not recognise; along with them are loose fruits of some species resembling *C. stenocarpa*, and a leaf which is not that of a Cinchona at all. They are accompanied by a barbarous drawing of what was probably intended for *C. pubescens*; the whole are called *C. peruviana*. Yet although the principal part of these documents belongs to *C. pubescens*, I do not find that species even mentioned by Mutis as belonging to the Flora of Santa Fé. It is not perhaps fair to carry this criticism further, and to blame M. Mutis for the inaccuracy of his friend Zea and his disciples. It is however not unimportant to show what dependence can be placed upon the information hitherto obtained from that source. I happen to possess two dried specimens of Cinchonas from Santa Fé, named under the

authority and auspices of M. Zea. One of them is *C. pubescens*, and is marked *C. cordifolia* Mutis, *ovata* Fl. Peruv., *pubescens* Vahl., all three different species; the other which is *C. lucumæfolia* is marked *C. lancifolia* Mutis, to which it has no resemblance.

Ruiz and Pavon, two zealous botanists employed by the Spanish Government in examining the Vegetation of Chili and Peru, are by far the most extensive and original writers upon this subject who have yet published the result of their inquiries. They visited the fine Cinchona countries, examined into the question personally with great care, and after their return to Europe received a great quantity of most valuable evidence from Don Juan Tafalla who remained in Peru, and from other persons. The result of their labours has been published in the *Flora Peruviana*, the *Quinologia* and the *Supplement* to that work; I have also examined a very valuable MS. left by Ruiz, and now in the possession of Mr. Lambert. They described several new species, although by no means all that are found in Peru, many of which are still unpublished, and determined with the most scrupulous accuracy the qualities of their barks. Their opinions are, however, rudely questioned, and their statements denied by Mutis, and especially by Zea, a most incompetent judge, and the erroneous views of the latter writers have been adopted by every Botanical author since that time, except Mr. Pöppig. Pharmacological writers have, however, not coincided with Messrs. Zea and Mutis; in particular Guibourt, Pereira, Royle, and Wood and Bache, have clearly seen the impossibility of the statements of the Santa Fé botanists being true. For my own part I have, botanically, followed Ruiz and Pavon, step by step, with their own specimens and many others before me, and I am bound to say that in my opinion they are entitled to the greatest confidence for care and accuracy. Nothing can be so absurd as to pronounce the species they have described as mere varieties of each other; all they have distinguished are most unquestionably distinct; and the only error that I can discover them to have committed has been that of having left many other species still unnamed. The evidence I have examined enables me to speak upon this point with confidence.

The principal part of the observations made by Ruiz and Pavon has been used by M. Laubert, chief physician to the Spanish army, in a "Memoir upon the different species of Quinquina;" of which a translation has been published by Mr. Lambert. That part which is borrowed from the published works of the Spanish Botanists deserves to be consulted by those who have not access to the original works; but the additional matter, derived from other sources is not to be depended upon. For example M. Laubert professes to give a correct tabular arrangement of the vernacular names of the Quito barks, distinguishing them from each other by short botanical characters, and referring them to their species. His first species is *C. microphylla* a name unknown to Botanists, but which Mr. Lambert says, upon the authority of Zea, was given by Mutis to the small-leaved variety of *C. glandulosa* Fl. Peruv. Under this M. Laubert collects the *Casc. Chauharguera* which belongs to *C. Condaminea*, *Casc. Pata de Gallareta* the produce of *C. ovata*, and the *C. lucumæfolia*. For these reasons M. Laubert's Memoir does not appear to me deserving of further notice.

Messrs. Humboldt and Bonpland have given some valuable and generally very correct information concerning certain species, in their splendid Plantæ æquinoctiales. But I must confess that the synonymy

in the *Nova Genera and Species Plantarum*, vol. iii. p. 399., is very unsatisfactory. All the errors and misconceptions of the Santa Fé Botanists have been adopted, and the whole synonymy is one mass of confusion. In his valuable account of the Cinchona forests of South America, Baron Humboldt has given an elaborate account of the discovery of the bark, and of the squabbles in which the Spanish Botanists have engaged upon that subject; but this distinguished traveller, who lived some time in Santa Fé, in the house of Don Jose Celestino Mutis who was one of the principal disputants, was not unnaturally biassed in his opinions by that officer, and consequently fell into several errors. He was led to believe that the Carthagena barks were equal to those of Peru, an error which is now well known to all pharmaceutical writers. While he exposed some of the errors of his predecessors regarding the Botanical synonymy of the Cinchona trees he fell into others, by believing that the Peruvian and New Grenada species were identical; this led him to say that *C. nitida* of the Fl. Peruviana is the same as *C. lancifolia* of Mutis or the *Cascarilla naranjada* of Santa Fé, a very serious mistake considering the different qualities of their barks. He was also induced to place too much confidence in the assertions of Don Francisco Antonio Zea, the friend of Mutis, who had arrived at the singular conclusion that *C. rosea* of the Fl. Peruv. the *Cascarillo pardo*, which is not a Cinchona at all, is only a variety of the *C. lancifolia* of Mutis. The effect of this has been to diminish very much the value of the critical part of Baron Humboldt's treatise.

No one has collected information concerning the genus Cinchona with more zeal and perseverance than my friend Aylmer Bourke Lambert, Esq., as is attested by his "Description of the genus Cinchona" published in 1797, with 13 plates; by his "Illustration of the genus Cinchona" published in 1821, and by his valuable collection of dried specimens obtained from the authors of the Flora Peruviana at a considerable cost. It will be seen in the following remarks how largely I have profited by this gentleman's materials. Unfortunately Mr. Lambert, like Baron Humboldt, formed an erroneous estimate of the value of information obtained from Zea, and thus has been led into mistakes which would otherwise have been avoided.

Messrs. Römer and Schultes in the 5th volume of their Systema Vegetabilium have collected the information contained in the Flora *Peruviana*, the *Quinologia*, and the writings of Humboldt and Bonpland, but with so little skill that their work does not deserve to be quoted. For example they combine C. lancifolia of Mutis, with C. nitida and lanceolata of the Flora Peruviana, which are all totally different; and they separate C. purpurea of the Flora Peruviana from C. pubescens of Vahl, making the latter a variety of C. cordifolia, although the two former are identical and the latter a distinct species. And again they mix C. hirsuta with C. cordifolia, which is much the same thing as saying that Viburnum Tinus and V. Lantana are varieties of each other.

M. De Candolle in his great work has treated of the genus Cinchona, and has been able from the examination of specimens to correct some errors and to arrange the species much better than any modern systematist. But the species did not occupy his attention very particularly, and like almost every body else he has been misled by the assertions of Messrs. Mutis and Zea.

Many very valuable remarks upon the Cinchonas of Peru have been

made by Mr. Pöppig, in the account of his journey in South America; of the translation in the Companion to the Botanical Magazine I have made large use. It is very much to be wished that Mr. Pöppig would furnish the world with the many other facts he must possess concerning this interesting subject. No genus is more worthy of a monograph than Cinchona, and no one could write that monograph so well as Mr. Pöppig.

As a specimen of the way in which this accomplished writer handles his subject, I close these remarks with the following extract upon the very important subject of the climate producing barks of the finest quality: — "The principal districts of the bark collectors are situated on what is called the Montaña de Huanuco, that is in the woods, which commencing near Ceja, in the province of Huamalies, stretch eastward through the northern part of Huanuco, and especially abound in the Quebrado of Chinchao; also filling the valleys of the mountains of Muña, Acomayo, and Panataguas, and losing themselves probably near the Rio Pachitea. The Cascarilleros of Huanuco range through the eastern side of the Andes in that province, and skirting the Rio Monzon, reap a rich harvest in the valley of Huallaga, and in the extraordinary deep valleys and defiles, such as the Quebradas of Chinchao and Casapi, which every where intersect and divide the country in this direction. Beyond the bounds that I have stated, the Cinchona trees grow in such a shrubby state that their bark, though powerful in quality, is unsuited for the purposes of commerce, and to the north of the Huallaga again, where the valleys are close and warm, its virtues are so deteriorated, as either to be entirely rejected by the merchants in Lima, or to fetch only a very inferior price, as it is easily distinguishable from the true Huanuco bark. The same species of Cinchona is so much affected by a subalpine situation and warm temperature as to produce an entirely different bark, a fact which I have verified by numerous experiments. The habit of the tree, too, is materially changed. All this is quite contrary to the opinion of Condamine, who makes the extraordinary assertion that the barks of the warm districts are the most powerful, while he virtually contradicts himself by stating, a few pages farther on, that the Cinchona from Jaen de Bracomoros was so bad that its very name condemned and rendered it unsaleable in Panama. The environs of Jaen are very low, being stated by Humboldt as having about the same altitude and temperature as the lower Huallaga, and to this day its produce is considered of quality inferior to what comes from Mayobamba, Chacapoyas, and Lamas. The small quantities of bark that are obtainable on the Jalcas, at considerable elevations, are sent to Truxillo, the natural port for the produce of this district, and bear a fair character, though the trade is only occasional. The bark from Mayobamba is very small, and gathered from the Cascarilla boba, which, even about Cuchero, possesses but little efficacy, and in the warmer atmosphere of Maynas is entirely inert. It was with these descriptions of bark that the cunning Peruvians deceived the rash and eager people from Brazil, who, after having expelled the Spaniards, hoped to realise and possess some of the fabled treasures of Peru, by making extensive commercial enterprises to Yurimagnas and Mayobamba. No wonder that the speculators of Para cursed the Peruvian bark trade (see *Martius's Travels*, vol. iii. p. 1178.), for the article that I found lying unsold at Para was the very worst that could be sent from Peru. Even now, the ignorance

and grasping disposition of the first Brazilian speculators are the subject of ridicule at Mayobamba ; and in Yurimagnas many hundred-weight of bad bark still lies rotting, to the ruin of the sub-prefect of that province, who, having the first time shipped off a large cargo of this worthless article, hoped to have accomplished the deception again, with equal success. Barks from the territory of the Upper Huallaga have never found their way to the Brazils on the Marañon, for any communication between Cuchero and Jabatinga is impossible and never existed; besides which, the commerce in Huanuco had even ceased before the Brazilians had permission to come to Maynas. In the province of Para, even under the flourishing state of trade, there are strong prejudices against the sale of Peruvian fever bark, for the better kinds have never been sent there. Thus the produce of the Montaña of Huanuco has always been transmitted to Lima, and thence to Europe by Cape Horn, and never took the imaginary way of the River Maranon.

In the Cinchona forests of Huanuco, the collectors were very attentive even to variations arising from locality. Thus they gathered the bark only from trees which grew on steep declivities or mountain-tops, rejecting the finest trunks that stood collected in promising groups, (manchas,) where the soil appeared moist and the air warm and deficient in proper ventilation. For this reason the price of the produce varied considerably even in small districts, that bark being most costly which was obtained from the coldest and most elevated spots. The provinces of Conchuras and Huamalies abound in forests of Cinchonas; near the villages of Cayambe and Pillao, and in Cuchero and Casapi, and on the mountains of Panataguas and Pampayaco, the very best kinds are procured. That from Pozuzo is small and inferior; while the bark of the Cascarilla hoya de Oliva, which grows only in small quantities near San Rafael, is considered the finest of all. With the exception of some few haciendas, all the above-mentioned countries, which teem with Cinchona trees, belong to no individual in particular; and it is the same with the unappropriated wilds of the Huallaga, which are uninhabited, and protected by no fort or government defence. Every one has a right to collect there, and it does not seem as if a single regulation of any kind existed with reference to the Cascarillas.

§ 1. *Limb of the corolla stupose. Leaves scrobiculate.*

829. C. micrantha *Fl. peruv.* ii. 52. t. 194. *Ruiz and Pav. quinol. suppl.* p. 1. *DC. prodr.* iv. 354. — C. scrobiculata *Humb. and Bonpl. pl. æquin.* i. p. 165. t. 47. *DC. prodr.* iv. 352. — High, cool, and wooded mountains of Peru, near Chicoplaya, Monzon, the Pueblo de San Antonio de Playa grande *R. and P.*; forests in the province of St. Jaen de Bracamorros *H. and B.* The last travellers were told that it also occurs at Chirinas Tabaconas, S. Ignacio, and Tambovapa. Cuchero *Pöppig.*

Branches quadrangular, quite smooth except among the inflorescence. Leaves oblong, obtuse, or hardly acute, rather membranous, very large, often a span long without the petiole, quite smooth on each side, very distinctly pitted at the axils of the veins, and either

smooth or hairy there; the uppermost, at the base of the inflorescence, shorter and blunter. Panicle loose, terminal, leafless with the upper divisions downy. Flowers the smallest in the genus except C. lancifolia. Calyx tomentose all over, with a short 5-toothed limb, scarcely at all altering in the fruit. Corolla tomentose, woolly inside the limb. — I have seen only two certain specimens of this very distinct and well-marked species; one in the Lambertian Herbarium and one in my own, gathered in Peru by Mathews (No. 1953.). There is in the former collection a second specimen from Pavon, marked *C. micrantha*, with obovate leaves and a small compact thyrse of flowers; but it is too imperfect to be determined satisfactorily. *C. scrobiculata* of Humboldt and Bonpland is unquestionably the true *C. micrantha*, which those Botanists might well suppose to be a distinct species if they judged from the imperfect description and uncharacteristic figure of the latter in the Flora Peruviana. Both Humboldt and Bonpland and Ruiz and Pavon state that this is commonly called *Cascarilla fina*. The former say that of all the species of Quina inhabiting the province of Jaen de Bracamoros it is the most common and most esteemed. The inhabitants of the town of Jaen, collect annually a great quantity of the bark which they send to the town of Picera, whence it is shipped to Lima. Ruiz, in his MSS., admits its excellence, but declares that it is never found alone in commerce; it is always mixed by the traders of the Provinces of Panatahuas, Huamalies and Huanuco with other species It is sometimes called *Casc. fina de Chicoplaya*. According to Pöppig, who calls it *Cascarilla provinciana*, the trees are of considerable circumference, and will frequently yield each 8 to 10 arrobas of dry bark; 3 kinds of it are known in commerce, one of which called *Pata de Gallinazo* is peeled from the young and upper branches. " Formerly the foreign merchants were prejudiced in its favour, and considered this as a fine sort, contrary to the opinion generally received in Peru. Probably the thinness and less woody texture of the rind, with the difficulty of procuring it in large quantities, occasioned the former idea. Its name, which signifies claw of the Black Vulture (Vultur Aura *Linn.*), arises from the blackish and radiated appearance caused by some species of Graphis, which generally grows upon it: the Pata de Gallareta mentioned by Ruiz and Pavon, the produce of Cinchona ovata, does not grow about Cuchero.". M. Reichel, who compared Pöppig's specimens with those of Bergen, ascertained that *Casc. provinciana* is the Huanuco bark of commerce, and that the *Pata de Gallinazo* forms a small portion of the so called *Lima Bark* of commerce. It is therefore the origin of the *Silver* or *Grey Cinchona* of English commerce.

830. C. nitida *Fl. Peruv.* ii. 50. t. 191. — Cascarillo officinal *Ruiz quinol.* p. 56. — Lofty mountains of the Andes in groves in cold situations near Pampamarca, Chacahuassi, Casapi, Casapillo, Cayumba, Sapan, Cuchero, and other districts; also on mountains in the provinces of Huamalies, Tarma and Xauxa *R. and P.* ? Cuchero, *Pöppig.*

Every part of the foliage and branches perfectly smooth. Leaves thin, obovate-lanceolate, acute, slightly shining, tapering very regularly and gradually into the petiole which is sometimes winged by it almost to its base; with deep ciliated pits in the axils of the principal veins on the under side. Branches of inflorescence almost entirely smooth, except

the pedicels. Peduncles corymbose, in the axils of the upper leaves, forming rather a small thyrse. Calyx with a tomentose tube; the limb campanulate, smooth, 5-toothed: teeth triangular, acute. I have seen no fully expanded corolla; but it appears to be like that of *C. lanceolata*. — This is certainly a very different species from *C. lanceolata*, with which it is associated by M. De Candolle, and from *C. Condaminea* to which Mr. Lambert unites it. The figure in the Flora Peruviana is excellent. I have examined 6 indifferent specimens in Mr. Lambert's herbarium; it does not occur in Dr. Thomson's collection. According to Ruiz this is considered in the provinces of Huanuco, Tarma, Huamalies, and Xauxa, to be the best of all the barks and it fetched in his time the highest price; it is called *Cascarillo* or *Quino fino*, the same name as is given to *C. micrantha* bark, and several others.

Pöppig has a bark called *Casc. hoja de Oliva*, which he believes to be produced by this, and of which he speaks thus: — "This kind of bark is only known in small quantities, and is not regularly collected. It resembles the finest kinds of Loxa bark, and excels them in the resinous and astringent flavour. The tree itself, which is unknown to me, grows only upon the coldest mountains, and is said to have a stem scarcely 8 feet high, straight, and producing very little bark, but which is so highly esteemed, that the viceroy and corregidores purchase it all, to send as presents to the king and the grandees of Spain, so that it is never seen in commerce. The flower is of a bright red, covered with a white tomentum inside, and expands in May." This bark has been described by Ruiz in the Quinologia, but he did not recognise it as belonging to *C. nitida*, and it is very doubtful whether it is produced by that species.

831. C. Condaminea *Humb. and Bonpl. pl. æq.* i. 33. t. 10. — Quinaquina *Condam. in act. par.* 1738. — Near Loxa in the mountains of Cajanuma-Uritucinga, and in those of Boqueron, Villonaco and Monje; it is also found near Guancabamba and Ayavaca in Peru. It always grows on micaceous schist, and rises as high as 7500 feet above the level of the sea, first appearing at the elevation of 5700 feet; so that it occupies a zone of 1800 feet. *Humboldt.*

Twigs quite smooth as high as the inflorescence. Leaves quite smooth at all periods of their growth, usually ovate-lanceolate, occasionally narrower and only lanceolate, in some specimens ovate; of a rather thin texture, not at all shining on the upper side, or but little so in some specimens; furnished almost always at the axils of the veins underneath when full grown, with a pit or scrobicula, which is either naked or ciliated, but when young indistinctly scrobiculate, or not at all. Petioles smooth, about ¼ the length of the leaves; stipules oblong, obtuse, membranous, smooth. Peduncles panicled, corymbose, in the axils of the upper leaves, forming a large loose thyrse, covered with a thick short down. Tube of the calyx downy like the pedicels; limb very shortly urceolate, 5-toothed, pubescent, not shining; with the teeth roundish-triangular, acute. Tube of the corolla slender, about four times as long as the tube of the calyx, tomentose; limb very shaggy internally. — Of this I have examined 6 specimens in Mr. Lambert's herbarium, and 15 in that of Dr. Thomson; many of them very fine ones. They all correspond in having a very short downy limb to the calyx, and a loose inflorescence, but they vary a good deal in the form

of the leaves and in the size of the calyx teeth. According to a MS. note of M. Bonpland in Mr. Lambert's herbarium this is the *C. lancifolia* of Mutis; but Humboldt most positively asserts that species to be identical with the *C. angustifolia* of Ruiz, which he also considers distinct from *C. Condaminea;* and in which he is quite right as will presently appear.

It is remarkable that R. and P. do not in their published works notice this species, which nevertheless seems to be one of the most common. I presume however that it is the sort which Ruiz, in his unpublished memoir above quoted, calls *Cascarilla Chauharguera*, and which he says is not only one of the most valuable kinds, but to which the tradition attaches among the bark gatherers of Loxa, of having been the identical bark sent by the Corregidor Don Francisco Lopez Cañizares in 1638 to the Viceroy of Peru the Conde de Chinchon.

In another place in the same MS. a species is described which is said to be sometimes named *Quina Carrasgueña*, because in the roughness of its quills it resembles the bark of the *Carrasca* or *Quexido*, a sort of Spanish evergreen oak. I know not whether this, which is more generally called *Casc. Crespilla buena* at Loxa, is intended for a synonyme of the *Casc. Chauharguera*, but if the punctuation of the MS. before me may be depended upon, it is to be so understood; and in that case it is found on the mountains of Cuença, Loxa, Riobamba, Jaen de Bracamoros, Chacapoyas, Mayobamba, and Caxamarca. This is sometimes made up in cases by itself, but more frequently is mixed with sorts of inferior quality; Ruiz says it "es una de las Especies mas estimadas en Loxa; y en mi opinion una de las mas activas y eficaces en sus virtudes." There seems no doubt that this species furnishes the Pale *Crown* or *Loxa Bark* of English commerce; or at all events a principal part of it.

§ 2. *Limb of the corolla stupose. Leaves not scrobiculate.*

832. C. lancifolia, or Quina naranjada *Mutis. period de St. Fé.* — C. angustifolia *Pav. quinol. suppl.* xiv. f. *a.* C. Tunita *Lopez MSS.* — Woods in the kingdom of Santa Fé. *Quinol. suppl.*

Branches quadrangular, smooth except when quite young, at which time they are covered with very short spreading hairs. Leaves oblong-lanceolate, very acute at each end, revolute at the edge; somewhat coriaceous, not shining, smooth above, thinly covered with hairs on the veins underneath, and not scrobiculate. Peduncles axillary, hairy, 3-fid, shorter than the leaves, and not at all forming a panicle or thyrse; the divisions cymose and about 5-flowered. Calyx-tube tomentose; limb smooth, campanulate, 3–5-toothed, the teeth revolute at the point. (Corolla hairy, the smallest in the genus, with a tube about thrice as long as the cup of the calyx; the limb spreading, with dense, longish, white hairs. Capsule $\frac{1}{2}$ an inch long, oblong, narrow, furrowed on each side, smooth, surmounted by an enlarged calyx. *R. and P.*) — I cannot conceive how this most remarkable and distinct species should have been referred to C. lanceolata, nitida, and I know not what others. I have been favoured by Mr. Lambert with dried specimens, which perfectly agree with the figure above quoted, and which show that it is entirely different from any of those to which it has been referred by one Botanist or another. It has had the credit of furnishing the finest

pale bark of commerce. But Ruiz in his MSS. asserts that it cannot be compared for good qualities with finer kinds of Loxa Bark. He moreover suspects it to be identical with the *Quina Amarilla* of Huamalies, but he judged merely from a comparison of the barks, having no Botanical specimens of that kind; and must have been wrong, because Pöppig has proved the *Huamalies* bark to be obtained from *C. pubescens.* Bergen says that what is called in commerce *Dark Ash bark, False Loxa*, or *Dark Ten Cinchona* agrees with samples of this from the collection of Ruiz.

833. C. lucumæfolia *Pavon in herb. Lambert.*—C. stupea *Idem.* — Loxa in Peru. *Pavon.*

Every part of the plant quite smooth except the corolla. Leaves oval-lanceolate, obtuse, coriaceous, shining, rather revolute at the edges, without any trace of pits on the under side; gradually narrowing into rather a long petiole. Peduncles axillary, corymbose, longer than the leaves, rather spreading, but stiff, often forming a large open thyrse. Calyx with a campanulate limb, having 5 shallow triangular teeth. Corolla tomentose, except at the base which is nearly smooth, with the tube 3 times as long as the tube of the calyx; the limb shaggy inside. — Seven good specimens in Mr. Lambert's herbarium, and 5 in that of Dr. Thomson show that this is a perfectly distinct plant, although confounded by the former with *C. Condaminea*, from which it differs in the smoothness of all its parts, the large cupped calyx, with shallow teeth, and the obtuse laurel-like leaves destitute of all traces of scrobiculi. One of the specimens in Mr. Lambert's herbarium is marked "vulgo *Cascarilla estoposa.*" This is no doubt the *Cascarilla hoja de Lucma* mentioned but not described in Ruiz's MSS.; nothing is said of its quality; he places it among those which furnish the *Quina fina de Loxa.*

834. C. lanceolata *Fl. Peruv.* ii. 51. iii. t. 223. — Cascarillo lampiño *Ruiz quinol.* 64. — Cold elevated mountainous situations in groves on the Andes, in the districts of Muña, Panas, Pillao and Cuchero *R. and P.* At the distance of 15 or 20 leagues from the city of Huànuco *Ruiz MSS.* Bolivia.

Twigs quite smooth as high as the inflorescence. Leaves nearly smooth at all periods of their growth, usually very exactly elliptical and acute at each end, sometimes more oblong, occasionally roundish-oblong and obtuse or almost cordate at the base; of a coriaceous texture, very glossy on the upper side, as much so as a common laurel; with rather prominent veins which are either hairy or smooth on the underside, and usually hairy at the axils, but very slightly scrobiculate there, if at all; petioles smooth, or sometimes downy when young, from $\frac{1}{8}$ to $\frac{1}{10}$ the length of the leaf. Peduncles panicled, corymbose, hardly longer than the upper leaves, to which they are axillary, forming a close compact thyrse, covered with a short thick down. Tube of the calyx downy like the pedicels; limb campanulate, shining, and almost always smooth, with acute or even acuminate triangular teeth. Tube of the corolla cylindrical, tomentose, about 3 times as long as the tube of the calyx; limb very shaggy internally. — Fifteen specimens in Mr. Lambert's herbarium, and 18 in that of Dr. Thomson, have supplied the foregoing description. If the most ordinary attention is paid to the distinctive characters of the species of this genus, *C. lanceolata* cannot

possibly be confounded with any other. It is said by the authors of the Flora Peruviana to be commonly called *Cascarillo* or *Quino bobo amarillo* on account of the colour of the bark inside, which in flavour is very like that of *Quina de Calisaya*. Ruiz says it is mixed in commerce with that of *C. hirsuta* and *C. nitida* and he suspects it to be the real source of *Calisaya* bark. In his manuscript history he says the bark of this is also called *Quina Anteada*, *Cascarilla Amarilla*, and *Casc. boba de Muña*, and that it is one of the finest sorts. I presume this must be the source of the *Yellow bark* of the English druggists; it is however uncertain whether the *Calisaya* bark from La Paz, at the extreme southern limit of the Cinchona districts, inhabiting a different climate, has the same origin. M. Guibourt assures us (ii. 80.) that specimens purporting to be those of trees yielding Calisaya, and brought from La Paz by M. Auguste Delondre, a French traveller in Upper Peru, belonged to *C. micrantha*, *Condaminea*, and 3 other species. But in the interior of one of the quills he found a leaf, which appeared to him to belong to *C. lanceolata*, and this he conjectures to be really the species furnishing the bark.

835. C. ovalifolia *Humboldt and Bonpl. pl. æq.* i. 65. t. 19. — C. Humboldtiana *R. and S.* v. 13. *DC. prodr.* iv. 353. — Loxa, *Pavon.* Forests in the province of Cuença. *Humb. and Bonpl.*

Branches smooth, apparently rather angular and furrowed. Leaves rather thin, exactly oval, scarcely acute at the point, tapering off into an unusually short petiole, except in the case of those leaves which are next the panicle, which are rounded at the base so as to acquire an ovate or even cordate form; not at all shining, smooth on the upper side, finely and impalpably downy on the under, especially when young, with the veins, especially their axils distinctly hairy, but without a trace of pits; when old losing their down. Panicle terminal, naked, thyrsoid, small, downy, now and then with small leaves subtending the lower branches. Calyx tomentose, with a shallow, 5-toothed, downy limb, which does not alter its form after flowering, except by enlarging a little and hardening. Corolla tomentose, rather funnel-shaped, as small as in C. micrantha, with the tube 3 or 4 times the length of the tube of the calyx; the limb shaggy in the inside. Fruit oval, rather downy, very strongly ribbed when ripe. — Of this species 3 specimens in the Lambertian herbarium, and 2 in that of Dr. Thomson, agreeing pretty well with the figure in the Plantæ æquinoctiales, sufficiently show that it is a species quite distinct from *C. micrantha*, from which its strongly ribbed fruit and the texture or form of the leaves certainly distinguish it. One of the specimens in Mr. Lambert's herbarium is named by Pavon "C. purpureæ affinis, sp. nov. ined. in regno Quitensi Loxa." It is stated in the *Plantæ æquinoctiales* that the bark of this species is not much esteemed; but that nevertheless a considerable quantity had been cut about the year 1782. It is reported in the same work to be called *Cascarilla peluda*, or "velvet-leaved Quina;" but I doubt whether this is not a mistake, because the leaves are so little downy that an ordinary observer would call them smooth except when young. In the last collection of Cinchonas received from Ruiz and Pavon's herbarium by Mr. Lambert, and from among which I have been favoured with a specimen, this is named, evidently by mistake, C. lanceolata.

836. C. ovata *Fl. peruv.* ii. 52. t. 195. — Cascarillo pallido

Ruiz quinol. 74. — Close ill ventilated groves in the hotter parts of the foot of the Andes near Pozuzo and Panao 10 leagues from Huanuco. *R. and P.*

Branches 4-cornered, thick, smooth, except towards the ends where they are hairy rather than tomentose. Leaves large, thin, ovate-oblong, when young velvety on the underside with a short thick felt, which falls off as the leaves grow older, smooth on the upper side; when full grown obtuse, or rather acute, at the base, with smooth petioles and shaggy axils to the under veins; the uppermost leaves almost cordate. Peduncles thick, quadrangular, tomentose, branched in the axils of the upper leaves, and leafy at their own base, forming a coarse compound panicle. Flowers sessile, or nearly so, in thick clusters. Calyx very tomentose, except the limb, which is smooth, thick, campanulate, 5-toothed, and apparently deep purple. Corolla purple according to the Flora Peruviana, tomentose, with a spreading, white, shaggy limb. — Of this Mr. Lambert's herbarium contains 3 specimens just passed flowering; along with which are glued down some oblong, rather strongly ribbed fruits, which are very obtuse at each end. As they do not correspond well with the figure and description in the Flora Peruviana, perhaps they do not belong to the specimens. According to a memorandum in M. Bonpland's handwriting in Mr. Lambert's herbarium, this was considered by the former botanist as a variety of *C. cordifolia* of Mutis. It is however perfectly distinct both from that species, and the *C. pubescens* of Vahl. Ruiz states that this is called in Panao *Cascarillo con corteza de color de Pata de Gallareta.* The bark is not employed in commerce, but it has been used in preparing the extract of Cinchona by the factors of Panao. It is added by Pavon in the *Quinol. suppl.* p. 18. that it is identical with *C. cordifolia* of Mutis, the *Quina Amarilla* of Santa Fé; but Ruiz in his MSS. does not confirm this; on the contrary he is unable to say what species produces the *Quina Amarilla* or *Q. Baya de Santa Fé*, and he speaks of this species, the *Pata de Gallareta* as quite a distinct kind, of the lowest quality. According to Bergen this is the origin of the *Jaen*, corrupted into *Ten bark* or *Ash bark* of commerce; but this is very doubtful; there is no proof of its growing about Jaen.

837. C. rotundifolia *Ruiz and Pavon MSS. in herb. Lambert. Lambert illustr. cinch.* p. 5. — Loxa in Quito *Pavon.*

Branches clothed with a short thick fur towards the extremities. Leaves roundish-oblong, obtuse, but not cordate, at the base, hardly acute, thin, quite naked on the upper side, except along the midrib, on the under side soft with down, not pitted, with the short petioles and veins covered with a close thick fur. Peduncles corymbose, tomentose, in the axils of the upper leaves, forming a close leafy thyrse. Flowers sessile, in very dense clusters. Calyx tomentose, with a short 5-toothed limb. Corolla tomentose, rather funnel-shaped, with the tube about 4 times as long as the tube of the calyx; the segments of the limb shaggy inside. — I have only seen 2 specimens in Mr. Lambert's herbarium. The species is perfectly distinct from all others; but I know not if the 2 separate, narrow, cinnamon-coloured unribbed capsules in that collection really belong to the specimens. It is most nearly allied to *C. ovata*, from which it differs in its thinner, and oblong not ovate leaves, in its tomentose petioles, smaller panicles, hoary calyx cup, and, if the fruit may be trusted, in that respect also.

838. C. cordifolia *Mutis MSS. Humb. Berl. mag. d. naturf.* i. 117. *S. and C.* iii. t. 185. — Mountains of New Grenada at an elevation of from 5000 to 8000 feet above the sea. *Humb.*

Branches quadrangular, smooth. Leaves roundish, obtuse at both ends, especially the base, or roundish-oblong and tapering to the base, strongly veined, thin, quite smooth above, soft with down on the under side, and hairy at the veins and axils when young, becoming nearly smooth when old; never pitted. Panicle contracted, thyrsoid, leafy at the base, or formed of corymbose peduncles axillary to the upper leaves; with the ramifications tomentose. Calyx tomentose, with a large, smooth, campanulate, 5-toothed cup, the lobes of which soon become quadrate and cuspidate; the tube, when it first begins to swell after the flowers have dropped, sub-globose, but soon after lengthening. Corolla tomentose, with a thick tube, the diameter of which is equal to the length of the shaggy lobes. — It is inconceivable how this most distinct species should have been confounded with *C. hirsuta* or *pubescens*, the last of which is the only one it really approaches, as will be obvious upon comparing the descriptions. There is no doubt of the specimens with leaves tapering to the base being the same as those in which they are nearly cordate, as gradations from one to the other form may be found upon the same branch, and they do not otherwise differ. I have examined 4 specimens in Dr. Thomson's collection, and 7 in that of Mr. Lambert. Of Mr. Lambert's specimens from Pavon, one is marked "Cinchona pubescens inedita;" two others "Cinchona sp. nova inedita de Loxa Quito Peru No. 1°;" a fourth with a similar ticket, but glued down on the same paper with "C. lanceolata;" and a fifth "Cinchona sp. nova de Loxa, vulgò *Palo Blanco*." But I have no confidence in these tickets belonging to the specimens to which they are attached, and consequently the information they convey is in my mind apocryphal. I judge that the plant now described is what was intended by the name of *C. cordifolia*, from the following circumstances: "In the first place the name applies to no other; secondly, this species is so marked in Mr. Lambert's herbarium by M. Bonpland, who would probably know the plant; and thirdly, it is the only one which the definition given by Humboldt entirely suits.

Humboldt and Bonpland say (*Pl. æq.* p. 66.), that *Quina jaune* is produced by this species, but no reliance can be placed on this statement, because it appears from Mr. Lambert's herbarium that Bonpland confounded different things under the name of *C. cordifolia*, especially *C. ovata*. In this he agrees with the authors of the *Fl. Peruv.* who state (*Quinol. suppl.* 18.) that their *C. ovata* is the *C. cordifolia* of Mutis, and produces the *Quina amarilla* of Santa Fé. But it appears from the same work (p. 56.) that Ruiz possessed only two bad specimens of Mutis's plant, and he is by no means sure of its identity with *C. ovata;* and the same careful and original writer, in his manuscript history, speaks of the bark of *C. ovata* as quite distinct from the *Quina Amarilla* of Santa Fé. If it were safe to conjecture anything in such a subject as this, it might be supposed that the *Quina Baya*, or *Q. Amarilla of Santa Fé*, which Ruiz in his MSS. describes as a sort of bad quality, of which more than 600 arrobas were landed at Barcelona in 1804 and 1805, was the produce of *C. cordifolia*.

839. C. pubescens *Vahl. in act. hafn.* i. 19. t. 2. *Lambert's*

description 21. t. 2. — C. purpurea *Fl. Peruv.* ii. 52. t. 193. Cascarillo morado *Ruiz Quinol.* 67. — Groves on the lower parts of the Andes where it is cool at night, in the districts of Chinchao, Pati, Muña, Iscutunam, Casapi, Casapillo and Chihuamccala *R. and P.* Mountain ridges of Panatahuas, Loxa, Jaen, and other provinces, on low hills, *Ruiz MSS.* Cuchero *Pöppig.* Santa Fé.

Young branches covered with a short close down. Leaves never scrobiculate, when young rather thin, not shining, slightly downy on both sides, especially on the under, and upon the petioles, sometimes quite soft in those parts, when older quite smooth, much firmer, and quite shining; those near and among the inflorescence roundish, sometimes broader than long, tapering into a long stalk, or merely ovate, for they vary very much upon the same specimen; those below the inflorescence ovate-oblong, or almost exactly oval, and acute. Peduncles trichotomously branched, corymbose, many flowered, tomentose in the axils of the upper leaves, forming a short and broad spreading leafy thyrse, the flowers in which are by no means compactly arranged; the subdivisions are in fact almost at right angles with each other. Pedicels and calyx-tube covered with a short close fur; the limb of the latter downy only, with 5 shallow, ovate, acute teeth. Corolla with a tomentose tube, much narrowed at the base, and almost six times as long as that of the calyx; limb deep purple, shaggy inside. Fruit tomentose, narrow, oval, as thick at one end as the other, rather more than an inch long. — Of this Mr. Lambert's herbarium contains 7 specimens, and Dr. Thomson's 5, besides which I possess one from Santa Fé de Bogota, collected by a pupil of Zea. It is probably the plant intended in the drawing sent by Mutis to Linnæus, under the name of Cinchona peruviana, and now preserved in the Linnean herbarium; and it is quite certain that the principal part of the loose flowers accompanying the drawing belong to it. No species can well be more distinctly marked, as will be seen by the preceding description, notwithstanding that it varies so much in the form of its leaves. It is not a little curious that Vahl, who first described this from Peruvian specimens given him by Joseph Jussieu, should not have discovered that the specimens in the Linnean herbarium, which he examined, belonged to it.

It is one of the species called in Peru *Cascarillo bobo de hoja morada* according to Ruiz, who in the Quinologia says that the bark is not known separately in commerce, but is mixed with that of *C. lanceolata*, *hirsuta*, and *nitida;* it appears to possess all their good qualities. But in his manuscript History he alters this opinion, and classes it only among the second rate barks.

Pöppig, who calls it *Casc. boba colorada*, describes this species as "a tree of considerable elevation and circumference, by which alone it might be discriminated from the allied species of Cinchona, as well as by its very large and membranaceous leaves, which are covered on the underside with broad, prominent, violet-coloured veins, that are so numerous in the young state as to give their own hue to the entire leaf. The bark, in a fresh state, is extremely bitter, and may probably be found useful for making cheap decoctions, as it can be sold at a very low price. It is not now universally collected, but formerly served for occasionally adulterating the better kinds; an imposition, however, that

was easily detected." Reichel, who examined Pöppig's specimens of the bark, determined them to belong to the *Huamalies bark* of commerce.

840. C. hirsuta *Fl. peruv.* ii. 51. t. 192. — Cascarillo delgado *Ruiz Quinol.* 60. — Wooded mountains of the Andes, in high and cold places near Pillao and Acomayo *R. and P.* and various other stations in the province of Panatahuas near Huanuco, 10° south of the line. *Ruiz.*

Young branches short-jointed, bluntly quadrangular, covered with coarse hair. Leaves oblong, acute or obtuse, coriaceous, revolute at the margin, shining above, with the veins hairy, with prominent veins covered with coarse shagginess on the under side, not scrobiculate; petioles short. Peduncles shaggy, trifid, densely corymbose, in the axils of the upper leaves, forming a compact leafy thyrse. Calyx-tube tomentose, angular; limb deeply campanulate, pubescent, with 5 acuminate teeth recurved at the point. Corolla with a cylindrical tomentose tube, 4 times as long as that of the calyx; limb revolute, very shaggy. Fruit obovate, smooth, rather strongly ribbed and veined. — Six specimens in Mr. Lambert's herbarium, and 2 in that of Dr. Thomson, assure the distinctness of this species, which is not unlike the hairy forms of Viburnum Tinus. It yields a kind of *Cascarillo fino*, employed in medicine formerly, under the name of *Quina delgadilla*, or *delgada*, but not collected now, because other kinds, especially *C. nitida* can be gathered so much more readily. *Ruiz.* Nevertheless it appears to be of the best quality; and probably forms part of the fine *Yellow bark* of the shops.

841. C. glandulifera *Fl. Peruv.* iii. 1. t. 324. — Cascarillo glanduloso *Ruiz Quinol. suppl.* 5. C. Mutisii β *Lambert Illustrations* p. 9. — Wooded mountains of Peru, near Chicoplaya *R. and P.* Mountains of Panatahuas and Huamalies, and those of Monzon and Chicoplaya *Ruiz MSS.* Cuchero, *Pöppig.*

Young shoots covered with a short fur, 4-cornered. Leaves oblong, usually cordate, obtuse or acute, short stalked, very rugose, undulated, shining and smooth on the upper side, covered with a short coarse hairiness on the underside, the secondary veins of which are prominent. There is seldom any trace of the glands described by Ruiz and Pavon as existing at the axils of the leaves on the upper side, and when they do appear, it is only in the form of a minute, discoloured, scarlike area; in the figure of the Flora Peruviana they are represented on the *under* side of the leaf: but this is a mistake of the engraver, as I have ascertained by examining the original drawing, or a copy of it, in Mr. Lambert's possession. Peduncles tomentose, leafy, branched, forming a thyrse rather than a cyme in the axil of the upper leaves; the whole constituting a loose leafy inflorescence. Calyx-tube tomentose; the limb campanulate, nearly smooth, as long as the tube, with 5 sharp ovate teeth. Corolla tomentose (not smooth as in the Flora Peruviana), with a short thick tube, the limb according to Ruiz and Pavon woolly inside. [Of this there is a well marked variety (?) with much smaller, more even leaves which are not at all cordate, more closely downy and less prominently veined on the under side; it is the *C. Mutisii a.* of Lambert's Illustrations p. 9. Dr. Thomson has two specimens of it, and Mr. Lambert three.] — I have seen two spe-

cimens in the collection of Dr. Thomson, and the same number in that of Mr. Lambert. Called *Cascarillo negrillo* by the Quina gatherers; ranks next in quality to the bark of C. lanceolata; and is much better than the Quina naranjada of Santa Fé. *Ruiz.* In his MSS. the same Botanist adds that although it is of good quality itself it always comes to Spain mixed with inferior sorts.

Pöppig describes this as furnishing the finest bark gathered near Cuchero. He says "The tree inhabits only the higher mountains, and is scarcer than the other species: its trunk 12 to 15 feet, and on the cold summits of the mountains attains only the stature of a bush, when it yields so little bark, that only 5 or 6 pounds on an average can be expected from a single tree. The Peruvians distinguish this bark by its generally blackish upper skin, which is only here and there interrupted by small grey-green spots when in a fresh state. The common people consider these appearances as an integral part of the bark, and look upon it as the more valuable, if beneath the larger spots there appears a black shining velvety substance, dispersed in ovals, of some lines broad (this probably arises from the presence of some species of Byssus). The quality of this bark is also attested, according to the statements of the Cascarilleros, by its exhibiting a glossy, shining, almost rosiny fracture; its colour withinside should also be that of a ripe orange, with a light transition to a fiery brown. In the month of February the forests are perfumed with the strong scent of its blossoms." The same excellent observer says that the *Casc. provinciana negrilla*, is obtained from the same tree growing in the warmer valleys; its samples are coarser, but the difference is of no medicinal importance. M. Reichel examined Pöppig's specimens of the bark, but was not able to identify them with any particular sort known in trade. He states that their "appearance, as well as other characters, and particularly a comparison with the original specimens of M. Bergen, leave no doubt that this bark is equal to the finest sort from Loxa. It formerly came, though rarely, and in small pieces among the Lima barks. The decoction is of a peculiarly beautiful reddish yellow; and when tried with the tests of oxyde of iron, oxalic and emetic tartar, proves its quality to be the very best."

842. C. villosa *Pavon MSS.* — C. Humboldtiana *Lamb. Illustration* 7. — St. Jaen de Loxa. *Pavon.*

Young branches somewhat quadrangular, villous with long, loose hairs. Leaves ovate-lanceolate, or oblong-lanceolate, rather thin, acuminate but hardly acute, pointed at the base, not shining, the upper ones among the flowers ovate; nearly free from hairs on the upper side except the midrib; covered with scattered, numerous shaggy hairs on the under side, especially the veins, and upon the petioles. Panicle terminal, rather long, leafy towards the base, with very villous pedicels. Calyx tomentose all over; with a short, half 5-cleft limb. Corolla .... Fruit about ½ an inch long, oval, rather strongly ribbed, tomentose. — Four specimens in Dr. Thomson's herbarium, five in Mr. Lambert's. Nothing is known of its bark. Why Pavon's expressive name of *C. villosa* should have been altered in Mr. Lambert's "illustration" to *C. Humboldtiana*, I am at a loss to discover.

843. C. oblongifolia *Lambert illustr.* p. 12.; not of Mutis. — Jaen de Loxa. *Pavon.*

Young shoots quadrangular, densely tomentose. Leaves 8–9 inches long, ovate oblong or rather cordate, obtuse, scabrous with down on

the upper side, very closely and softly tomentose on the under where the veins are strong and prominent; petioles tomentose, about 2 inches long. Panicle rather small, thyrsoid, terminal, tomentose, leafless, shorter than the upper leaves. Calyx coarsely tomentose all over; the limb with 5 sharp teeth. Corolla coarsely tomentose externally, with the tube about 3 times as long as that of the calyx; the limb smooth inside except just at the edges which are tomentose. — There are two specimens of this in Mr. Lambert's herbarium, one of which is marked by Pavon "vulgò *Azahar;*" another is in Dr. Thomson's possession, proving it to be a species perfectly different from all others. Upon what information, unless that of M. Zea, this very striking species should, contrary to all evidence, have been supposed to be the *C. oblongifolia* of Mutis I am unable to state. Mutis expressly states that his *C. oblongifolia* has *smooth* leaves. It has nothing to do with that species, which is *C. magnifolia*, and its bark is unknown. It stands nevertheless, in the latest edition of the London Pharmacopœa, as yielding one of the barks directed by the College of Physicians to be employed in the shops.

§ 3. *Limb of the corolla smooth, or only downy at the edge.*

844. C. acutifolia *Fl. Peruv.* iii. 1. t. 225. — Cascarillo de hoja aguda *R. and P. quinol. suppl.* 8. — Low groves of the Peruvian Andes, in Chicoplaya, by the river Taso. *R. and P.* Mountains of the Andes near Chicoplaya, Monzon, and other places in the provinces Panatahuas and Huamalies. *Ruiz MSS.*

Shoots quadrangular, when quite young covered with a fine soft down. Leaves ovate-lanceolate, acuminate, acute or obtuse at the base, coriaceous, very even, a little wavy; with midrib and the veins of the underside covered with long fine hairs, especially at the axils, which are not scrobiculate; the uppermost leaves much narrower than the lowest. Inflorescence leafless, tomentose. Calyx tube very tomentose; limb pubescent, deeply divided into long narrow channelled obtuse teeth. Corolla almost smooth, much longer than the calyx; the segments of the limb smooth inside, except at the edge which is covered with a short close down. — Of this I have only seen some fragments in Mr. Lambert's herbarium. One of the worst species for medicinal purposes; it is found sometimes in parcels of other barks. *R. and P.* It does not appear to have any vernacular name. Ruiz in his MSS. asserts that it does not deserve any attention for medical uses.

845. C. magnifolia *Fl. Peruv.* ii. 53. t. 196. — Cascarillo amarillo *Ruiz quinol.* 71. C. caduciflora *Lamb. illustr.* 11. *not of Bonpl.* C. oblongifolia *Mutis according to R. and P.* not *of Lambert.* — Abundant on the mountains of Panatahuas about Cuchero, Chincao, Chacahuassi and Puzuzu, in low land near torrents, in places fully exposed to the sun and badly ventilated. *R. and P.* Cuchero, *Pöppig.*

Young branches quite smooth, terete, scarcely at all angular. Leaves oblong, sometimes narrowed towards the base, obtuse, often as much as a foot long exclusive of the footstalk, coriaceous, strongly ribbed, flat, shining on both sides, and quite free from hairiness, unless when very young, except upon the principal veins and at their axils where there is always a tuft of rather long hairs. Flowers in a large terminal

leafless thyrse, whose branches are rather erect, and merely downy, not woolly. Calyx-tube covered with very close short tomentum; limb pubescent, smooth at the edges, with oval imbricating obtuse teeth. Corolla tomentose externally, with a tube scarcely 4 times as long as that of the calyx; the limb quite smooth inside, except just at the edges which are tomentose. Fruit smooth, often $1\frac{1}{2}$ inch long, narrower at the base than the apex, smooth, slightly ribbed. — I have seen 2 certain specimens of this in Mr. Lambert's herbarium, and 6 in that of Dr. Thomson. In the latter collection there also exists a branch of a plant very much resembling this, but having the divaricating inflorescence and tomentose leaves of *C. pubescens*. I am unable to determine whether it is a variety, a species, or a hybrid production. It is what was described in *Mr. Lambert's illustration* as the true *C. magnifolia* of the *Fl. Peruv.*; but it agrees neither with the figure nor description given in that work, nor with the mass of specimens so named, in the unarranged part of Mr. Lambert's herbarium. What is called *C. caduciflora* in *Lambert's illustrations* is the true *C. magnifolia*, and is quite different from what M. Bonpland intended by the former name. According to Ruiz this is one of the species known under the name of *Cascarillo de Flor de Azahar*, and not met with in commerce, except in the form of extract, which has been found of excellent quality. It derives its name from the resemblance between the smell of its flowers and those of the Orange, and is one of those discovered in the kingdom of Santa Fé by Mutis. *R. and P.* The same authors say it is the *C. oblongifolia* of Mutis; it is entirely different from the plant called by that name by Mr. Lambert. Ruiz in his MSS. describes the bark as being of indifferent quality, of little value in the market; he says it is the *Quina roxa* of Santa Fé; and consequently the *red bark of Carthagena*, from which port it is shipped for Europe. This has been questioned by Mr. Lambert, but proved to be true, by Bergen, who found it to be the bad bark known in commerce under the name of *Quinquina nova*. The source of the valuable *Red bark of Lima*, or *Quina colorada* is at present unknown.

Pöppig found near Cuchero a *Corteza de Azahar* which he refers to this species, and which he describes thus: — "A very stately tree, with unusually large white flowers, diffusing a most delightful scent, like that of orange blossoms. To this bark is never applied the name of Cascarilla, that is, Fever Bark, in its strict sense, as the ignorant observer does not consider the Azahar to be a Cinchona. It is like, except the stem, a young oak, with bark 4 or 5 lines thick, and woody; which, for the latter reason, does not roll itself into tubes, possesses little astringency, and is never gathered for sale: still it is said to be applied to officinal uses occasionally in Europe." He adds that it has been chiefly employed in the adulteration of the superior sorts of bark (a very common practice). It however bore too much resemblance to Oak-bark, and was so heavy and easily distinguishable by its very sharp and disagreeably bitter flavour from the fine aromatic taste of the genuine kind, that the imposition could not prevail to a very great extent.

846. C. caduciflora *Bonpl. in. pl. æquinoct.* i. 167. — C. magnifolia *l. c.* 136. t. 39. — Near the town of Jaen de Bracamoros *Humb. and Bonpl.*

I have have seen no specimens of this plant and do not attempt to de-

scribe it. It appears to differ from *C. magnifolia* in its corolla being quite smooth, with a tube only twice the length of the limb of the calyx, and in the stamens growing from near the base of the tube of the corolla, not in the middle of the tube. These characters are abundantly sufficient to separate it from *C. magnifolia*, to which however it is very closely allied. If we are to trust the figure in the *Plantæ æquinoctiales* the fruit is not obovate as in the species just named, which constitutes another mark of distinction. — It is stated in the *Pl. æquinoct.* that this is called *Cascarilla bora*, near the town of Jaen de Bracamoros, and that no use is made of its bark, "although that of the trunk contains a great quantity of resin."

847. C. stenocarpa *Lambert Illustr.* 13. — Jaen, in the mountains of Loxa, *Pavon.*

Branches rather quadrangular, when young very slightly pubescent. Leaves elliptical, acute, tapering to the base where they end in a long smooth stalk, rather shining, not coriaceous, but about the texture of the leaf of an apple tree, smooth on the upper side, paler on the under side, and slightly hairy, especially upon the veins and at their axils; the principal veins prominent. Panicle terminal, thyrsoid, loose, leafless, pubescent. Calyx-tube long, narrow, tomentose; limb 5-parted, pubescent, rather membranous, with the segments acute. Corolla pubescent; tube slender, funnel-shaped, rather more than 3 times the length of that of the calyx; limb slightly spreading, with narrow acute segments, which are smooth, except near the margin. Fruit about 2 inches long, narrow, smooth, the same width at each end. — There are 2 specimens in Mr. Lambert's herbarium, and 3 in Dr. Thomson's. They are so very much like the figure and description of *C. caduciflora* that I see little to distinguish them except the greater length of the tube of the corolla, and I should be inclined to think them the same if M. Bonpland had not stated that he found no difference between the leaves of that species and *C. magnifolia.*

848. C. macrocarpa *Vahl in act. hafn.* i. p. 20. t. 3. *Lambert descript.* 22. t. 3. — C. ovalifolia *Mutis MSS. Humb. Berl mag.* l. c. p. 118. — Loxa, *Pavon.* Santa Fé *Humboldt*; a supposed variety is said to grow about Santa Martha.

Young branches acutely quadrangular, very tomentose. Leaves coriaceous, obovate, obtuse, revolute at the edge, sometimes slightly cordate, when young tomentose on both sides; when full grown smooth and shining on the upper side, except the midrib and principal veins which continue tomentose, on the under side thinly covered with down except along the midrib and principal veins, which are very tomentose. Cyme terminal, consisting of about 9 pedicellate flowers in 3 parcels: extremely tomentose, with a pair of small rhomboidal obtuse leaves at the base. Branches of the inflorescence and pedicels short and thick. Calyx obconical, very tomentose inside as well as outside, with a spreading, shallow, 5-toothed limb. Corolla very tomentose, about $1\frac{3}{4}$ inch long, with the tube nearly $\frac{1}{8}$ of an inch in diameter; the limb spreading, smooth inside, tomentose at the edges. — I have only seen 3 bad specimens of this remarkable plant, which appears from a single loose fruit in Mr. Lambert's herbarium to approach the genus Cosmibuena. This fruit does not however at all agree with that figured by Vahl, which is very like the capsule of *C. magnifolia.* This *C. macrocarpa*

is not however a real Cosmibuena as is sufficiently proved by its valvate corolla and permanent calyx. By some mistake it is said in the Plantæ æquinoctiales (i. 67.) to be the same as *Cosmibuena obtusifolia*, a totally different plant. R. and P. in the *Suppl. quinol.* say that this is the *Quina blanca* or *Cinchona ovalifolia* of Mutis.

Vahl asserts, in the place above referred to, that the specimen preserved in the Linnean collection is this species, and consequently that *C. macrocarpa* is what was first discovered by Mutis in Santa Fé. How entirely this statement is devoid of foundation will appear from the following memorandum made by me upon examining the Linnean collections a few weeks since.

In the herbarium of the elder Linnæus there is a specimen marked *C. officinalis*, in the handwriting of that Botanist, which is not a Cinchona at all, according to the modern limitation of that genus; it does not appear whence. In the same herbarium is a specimen of a leaf of some plant not belonging to the genus Cinchona, and glued to the same paper 2 loose fruits resembling that of *C. stenocarpa*, the whole received from Mutis, and marked, but not by Linnæus, *Cinchona peruviana;* attached to them but on a separate sheet of paper are loose flowers of 2 species of Cinchona mixed together, part of which certainly belongs to *C. pubescens*. Finally there exists along with these evidences a barbarous figure, transmitted to Linnæus by Mutis, of some Cinchona, which cannot have been intended for C. macrocarpa, but which is more like *C. pubescens*, and of no authority for anything; the only precise fact exhibited by it being that the flowers are dark purple. In Smith's herbarium among the younger Linnæus's materials is a specimen from Mutis marked "Arbre de Quinquina qu'on vient de decouvrir au royaume de Santa Fée" which is *C. pubescens*. Nothing like *C. macrocarpa* is to be found.

849. C. cava *Pavon MSS. in herb. Lambert.* — C. Pavonii *Lambert illustr.* 8. — Quito *Pavon.*

Young branches tomentose. Leaves stalked, oblong, subcordate or obtuse at the base, obtuse or rounded at the apex, 8 or 9 inches long, and 6 or 7 broad, rather coriaceous, smooth above, tomentose beneath. Cyme terminal, very compact, trifid, tomentose, shorter than the leaves next below it. Calyx-tube long, narrow, tomentose; limb cyathiform, spreading away from the corolla, pubescent, with 5 shallow blunt teeth. Corolla full 2 inches long, tomentose externally; tube rather curved; limb valvate, tomentose, not stupose. Anthers inserted in the throat. Fruit cylindrical, between 5 and 6 inches long, smooth, not ribbed, tipped by the hardened remains of the permanent calyx cup. — On the ticket of this plant in Mr. Lambert's herbarium are the following words: "Cinchona cava. Sp. nova inedita vulgò *Canela*, de Loxa Quito Peru. Es preciosa esta planta." Nothing more is known of it.

*** *pe cies imperfectly kn own.*

850. C. dichotoma *Fl. Peruv.* ii. 53. t. 197. — Cascarillo ahorquillado *R. and P. suppl. quinol.* 3. — Common in groves on the Andes near Pueblo nuevo in the district of Chicoplaya. *R. and P.*

A small smooth tree. Branches slender, quite smooth, thickened at

the knots. Leaves obovate-lanceolate, acute at each end, not coriaceous, nor membranous, quite smooth on both sides, not scrobiculate underneath. Flowers unknown. Fruit between 2 and 3 inches long, slender, clavate, tipped by the remains of the calyx, arranged in cymes whose branches are divaricating and rather dichotomous. — It is very uncertain whether this is really a Cinchona. According to *R. and P.* the bark has the reputation in Chichoplaya of being one of the *Quinas finas*, or best for medicinal purposes. It does not appear to have any native name.

851. C. macrocalyx *DC. prodr.* iv. 353. I am unable to refer this to any species I have seen. C. lucumæfolia is quoted as a variety, but that plant does not at all agree with the specific character given by M. De Candolle. Another variety is said to be the *C. Uritusinga*, but that should be *C. Condaminea.*

851 *a*. C. crassifolia *Pavon in DC. prodr.* iv. 354. This does not well correspond with any species I have seen, unless it be with some branches of a plant confounded with C. macrophylla in Mr. Lambert's herbarium.

852. C. Pelalba *Pav. in DC. prodr.* iv. 355 is possibly C. rotundifolia, but the character ascribed to its inflorescence is at variance with that species.

853. C. Muzonensis *Goudot. DC. prodr.* iv. 355.; I have seen nothing like this.

The result of the preceding inquiry, so far as it affects the barks ordinarily used in this country, is shown in the following table of officinal names referred to their species :—

(*a*) *Pale Barks.*

Crown or Loxa Bark	C. Condaminea.
Silver, Grey, or Huanuco bark	C. micrantha.
Ash bark	(*not ascertained*).
White Loxa Bark	(*not ascertained*).

(*b*) *Yellow Barks.*

Yellow Bark	C. lanceolata, chiefly; also C. hirsuta, and nitida.
Calisaya	C. lanceolata ?
Carthagena bark	C. cordifolia ?
Cusco bark	(*not ascertained*).

(*c*) *Red Barks.*

Red Cinchona Bark of Lima	(*not ascertained*).
Cinchona nova	C. magnifolia.

(*d*) *Brown Barks.*

Huamalies bark	C. purpurea.

*** No doubt this genus will be largely increased by future discoveries.

LASIONEMA.

Calyx 5-toothed. Corolla hypocrateriform, smooth, with a spreading imbricated limb. Stamens very slightly projecting; filaments bearded in the middle; anthers roundish. Capsule dehiscing in the middle of the cells, with a complete dissepiment. Seeds narrow, winged.

854. L. roseum *D. Don in linn. trans.* xvii. 142. — Cinchona rosea *Fl. Peruv.* ii. 54. t. 199. Cascarillo Pardo *Ruiz quinol.* 77. — Mountains of Puzuzu and Muña in low situations *Ruiz.* Cuchero *Pöppig.*

Branches slightly quadrangular, smooth, except when young, at which time they are covered with a slight hairiness, especially between the angles. Leaves obovate-lanceolate, acute, not shining; neither thin nor coriaceous, smooth on both sides except at the axils of the veins on the underside. Panicles naked, terminal, thyrsoid, narrow, with spreading distant rather compressed branches, covered with dense short spreading hairs. Calyx quite smooth, with a shallow 5-toothed limb. Corolla pink. — It does not appear that the bark of this, which in Peru is commonly called *Asmonich*, is now employed in medicine. The Indians use its beautiful flowers to adorn their temples and the images of their saints. Pöppig found it about Cuchero where it "occurs not unfrequently; it is a highly beautiful tree, which in its size and mode of ramification may be justly compared with the white Beech of Europe, It is adorned in July with innumerable pale violet flowers, and in its growth, circumference of stem, and hardness of wood, differs greatly from all the other Cinchonas, the trunk seldom exceeding from 6 to 12 inches in diameter. The name of *Palo de San Juan* refers to the flowering season. Of the bark no use is made, for no one supposes it to belong to the Cinchonas; but there can be little doubt that their peculiar properties would be found, on examination, to exist in the thin and smooth bark of its riper branches."

COSMIBUENA.

Calyx 5-toothed, campanulate, deciduous. Corolla with a long curved tube, and a 5-lobed limb, which is imbricated in æstivation. Anthers oblong, subsessile, exserted. Stigma bipartite. Capsule oblong, taper, 2-celled, somewhat 4-valved, dehiscing from the apex, and dividing the septa. Seeds girded by a lacerated wing. — Smooth South American Trees. Leaves ovate, short stalked. Stipules large, oval, obtuse, erect, deciduous. Flowers long, terminal, white.

855. C. hexandra *Pohl. pl. bras.* i. 10. t. 8. *DC. prodr.* iv. 356. — Cinchona hexandra *Don gen. syst.* iii. 478. — Mountainous woods of Brazil, in the provinces of Minas Geraes, and Rio Janeiro.

A tree. Leaves oval, obtuse, covered on the under side, as are also the flowers, with yellowish hairs. Corolla 5–6-cleft, purple. Stamens 5–6. — An indifferent sort of fever bark is produced by this plant; M. Guibourt thinks it may be what has been known in commerce as *Quinquina coloradá*. He received the latter under the name of *Brazilian Quinquina*. It contains a very little cinchonine, is thin, blood-coloured within, very bitter.

REMIJA.

Tube of calyx obovate, with a 5-cleft permanent limb. Tube of corolla slender; limb 5-parted, with linear segments. Filaments unequal, inserted into the tube of the corolla; anthers linear, enclosed. A fleshy, elevated, truncated disk, distinct from the style. Stigmas 2, linear, enclosed. Capsule opening from the apex to the base, with a loculicidal dehiscence. Seeds numerous, peltate, winged. — Slender Brazilian bushes. Leaves oblong, or ovate, coriaceous, deeply furrowed above, opposite or ternate, revolute at the edges, covered with ferruginous hairs underneath. Stipules lanceolate connate at the base, deciduous. Racemes long, axillary, interrupted; flowers in opposite fascicles. Corollas downy externally.

854. R. ferruginea *DC. prodr.* iv. 357. — Cinchona ferruginea *Aug. de St. Hil. pl. us.* t. 2. — Dry mountains in the province of Mines in Brazil.

Leaves oblong-lanceolate, rather narrow. Racemes interrupted, scarcely branched. — This and the following are substituted in Brazil for Cinchona bark, under the names of *Quina da Serra* or *Quina de Remijo*, but they are said to be of inferior quality.

855. R. Vellozii *DC. prodr.* iv. 357. — Cinchona Vellozii *Aug. de St. Hil. pl. us. bras.* p. 3. — With the last.

Leaves ovate, tapering to each end. Racemes interrupted, scarcely branched. Differs from the last in the flower stalks being shorter, the bractes less linear, and the flowers longer and more numerous.

HYMENODICTYON.

Tube of calyx ovate, limb 5-toothed. Corolla funnel-shaped, 5-lobed. Stamens very short; filaments smooth, inserted lower than the throat; anthers protruding. Style long, prominent; stigma clavate, capitate, somewhat lobed. Capsule naked, 2-celled, 2-valved, with a loculicidal dehiscence. Seeds surrounded by a reticulated wing, bifid at the base. — Large Indian trees. Branches compressed. Stipules deciduous, with glandular fringes. Flowers small, inconspicuous, green, downy.

856. H. excelsum *Wall. in Roxb. fl. ind.* ii. 148. *tent. fl. nep.* i. 31. *DC. prodr.* iv. 358. — Cinchona excelsa *Roxb. fl. ind.* i. 529. *corom.* ii. t. 106. — Mountainous parts of the Circars of India.

Trunk straight, of considerable thickness and height. Branches numerous, spreading. Bark of the trunk pretty thick; the exterior coating grey, light, spongy, cracking in various directions, and frequently falling off; the middle coat brown, of a farinaceous nature, and as thick as both the exterior and interior coats; the interior white. Leaves opposite, oblong, entire, soft, downy, particularly on the under side; veins simple, and frequently opposite, from 6 to 12 inches long, and from 3 to 5 broad. Floral leaves, at the lower part of the ramifications of the panicle, in shape like the rest, but much smaller, coloured, more permanent, and bullate. Petioles round, downy, 2 or 3 inches long. Stipules within the leaves, ovate-cordate, acutely serrate, erect, caducous. Panicles terminal, large, generally with the lower ramifications decussating. Flowers fascicled, small, greenish-white, exceedingly numerous, exquisitely fragrant. Calyx superior, 5-toothed. Corolla funnel-formed, downy; tube long; border 5-parted, with oval, spreading divisions, not half the length of the tube. Filaments 5, short, inserted into the mouth of the tube; anthers erect, $\frac{1}{3}$ within the tube. Style twice the length of the tube; stigma capitate. Capsule oblong, crowned with the remains of the calyx, about as thick as a field bean, but twice as long, 4-streaked, marked with small white, elevated specks, 2-celled, 2-valved, opening from the top. Placentæ slender, angular, the length of the capsule, affixed lengthways to the suture of the partition. Seeds from 6 to 12 in each cell, chestnut-coloured, imbricated, oblong, compressed, enlarged all round by a membranous jagged wing, which at the base is split up to the seed itself. *Roxburgh.*—The 2 inner layers of bark possess the bitterness and astringency of Peruvian bark, and when fresh in a stronger degree. The bitterness is not so quickly communicated to the taste, on chewing the bark, but is much more durable, especially about the upper part of the fauces. *Id.*

EXOSTEMA.

Calyx obovate, 5-toothed. Corolla with a terete tube, and a 5-parted limb, with linear segments. Anthers linear, exserted. Capsule crowned by the calyx, dehiscing from the apex through the dissepiments into 2 half fruits. Seeds girded by a membranous entire border. — Trees or shrubs. Leaves oval or lanceolate, short-stalked. Stipules solitary on each side of the petioles. Peduncles axillary or terminal. Flowers white or pink. Bark without either quinine or cinchonine.

857. E. caribæum *Röm. and S.* v. 18. *DC. prodr.* iv. 359. — Cinchona caribæa *Jacq. amer.* t. 179. f. 65. *Lamb. cinch.* t. 4. C. jamaicensis *Wright trans. roy. soc.* 67. 504. t. 10. *Bot. rep.* t. 481. — Most of the West India islands and Mexico. (Quinquina Piton; Sea side Beech.)

An erect branched shrub, about 10 feet high. Leaves lanceolate, acuminate, entire, smooth, reflexed at the point, stalked, 2–3 inches long. Peduncles 1-flowered, short, axillary. Flowers very sweet-scented, whitish flesh-colour, $1\frac{1}{2}$ inch long. Corolla with a very long, cylindrical, erect tube, and 5 linear, obtuse, concave, reflexed segments longer than the tube. — The capsules, before they are quite ripe, are

extremely bitter, and their juice produces a burning itching in the nostrils and lips. *Jacq.* The bark is febrifugal and emetic. It has a nauseous smell, and is excessively bitter and disagreeable. Dr. Wright describes the flavour as at first sweet with a mixture of horseradish and aromatics, afterwards excessively bitter. According to Guibourt the little crystalline points with which it sparkles when broken are some principle peculiar to this bark.

858. E. floribundum *R. and S.* v. 19. *DC. prodr.* iv. 360. — Cinchona floribunda *Swartz fl. ind. occ.* 375. *Lamb. cinch.* 27. t. 7. C. montana *Badier journ. phys.* 1789, *febr.* cxxix. t. 1. C. Sanctæ Luciæ *David. phil. trans.* 74. C. Luciana *Vittm. summ. suppl.* i. 264. — West India islands, among woods, by the side of torrents.

Leaves elliptical, acuminate, 5–6 inches long, smooth like the peduncles and flowers. Peduncles terminal, corymbose. Teeth of the calyx short, acute. Corolla 3 times shorter than the leaves. Capsule turbinate, smooth. — Bark similar to the last, but rather drastic. Pelletier and Caventou found in it neither quinine nor cinchonine. It is called both Quinquina Piton and Quinquina of St. Lucia.

860. E. Souzanum *Mart. Linnæa litt.* 1830, p. 45. *DC. prodr.* iv. 361. — Brazil.

Leaves obovate or ovate, acute, smooth. Corymbs few-flowered, terminal. Capsules scarcely an inch long, obovate, compressed. Valves with about 4 nerves. Seeds transversely oblong, with a broad wing all round. — According to Guibourt this plant produces an excessively bitter febrifugal bark called *Quinquina de Piauhi.* It colours the saliva yellow, and is said to contain cinchonine. Buchner found in it an alkali which he called Esenbeckine, upon the erroneous suption that the bark belonged to Esenbeckia febrifuga.

861. E. peruvianum *Humb. and Bonpl. pl. æq.* i. 133. t. 38. *DC. prodr.* iv. 360. — Cinchona peruviana *Poir. dict. suppl.* iv. 640.—Colder parts of Peru on the side of the Andes between the river Chota and the village of Querocotillo.

Leaves ovate-oblong, acute, rounded at base, the upper sessile and cordate. Corymbs terminal, sessile. Peduncles and calyx downy. Corolla silky outside, its lobes scarcely shorter than the tube. Filaments smooth, united to the tube at the orifice. Stigma obsoletely 2-lobed. Calyx-teeth acute. — This has a very bitter bark, a little sweet, with a nauseous smell, according to Guibourt.

MANETTIA.

Limb of calyx 4–5-lobed, often with secondary lobes interposed between the principal ones. Corolla funnel-shaped, with a terete or quadrangular tube, a hairy throat, and a 4–5-lobed limb. Anthers sessile in the throat of the corolla. Capsule ovate, compressed, crowned with the lobes of the calyx. Seeds peltate, girded by a usually toothed border. — Herbaceous

plants or shrubs, with slender twining stems, and axillary 1-many-flowered peduncles.

862. M. cordifolia *Mart. spec. mat. med. bras.* i. 19. t. 7. *DC. prodr.* iv. 363. *Bot. mag.* t. 3202. — M. glabra *Cham. and Schlecht. Linnæa* 1829. p. 159. *DC. prodr.* iv. 363. — Buenos Ayres; banks of the Arroyo de la China, a stream that enters the Uruguay entre Rios. Hedges in the province of the Mines in Brazil, near Villa Rica and elsewhere.

Whole plant glabrous. Stem suffruticose, much branched, very slender, round, twining; bark grey and exfoliating, on the young shoots green, glabrous, shining. Leaves (2 inches long, 1 inch broad, but gradually smaller, and the uppermost about 4 lines long, 2 lines broad, while the low and largest on a vigorous cultivated specimen, are 4 inches long, and nearly 2½ broad,) opposite, petioled, cordate, acuminate, glabrous on both sides, shining, pale, with prominent veins and obscure minute reticulations, below dark, and the veins slightly channelled above. Stipules small, subulate, and at length often reflexed in their upper half, bases broad and connate within the petioles, so as to form a small cup, which is occasionally toothed, round the branch. Peduncles elongated, solitary, glabrous, filiform, shining and single-flowered, at the extremities of the branches, which are subsequently elongated, rendering the peduncle axillary. Calyx green, glabrous, 4-parted, with minute, divided intervening teeth; segments acute, at length reflected, 1-nerved. Corolla (fully 1½ inch long, 3½ lines across the revolute limb,) very handsome, shining on the outer surface, and glabrous every where, except a little above its base on the inside, where for some distance it is densely clothed with inverted, white hairs; tube clavate-funnel-shaped, with 4 flat sides, nectariferous, and only colourless at the base, every other part of the corolla vermilion orange-coloured, deepest on the inner side of the limb, green in the young buds, throat dilated and naked; limb 4-parted, segments deltoid, revolute. Stamens 4, alternating with the segments of the corolla; filaments colourless, adhering to the tube throughout its whole length, the free portion slightly connivent, and rather shorter than the segments of the limb; anthers versatile, oblong, purple, inserted by their back, bursting along the front of the cells, which are distant in the middle, connivent at the extremities; pollen green. Ovary inferior, green, compressed, bilocular, crowned by a white depressed disk, which rises above the insertion of the corolla. Style rather longer than the stamens, exserted, colourless, filiform. Stigma green, blunt, of 2, erect, parallel lobes. Ovules numerous, erect, on erect, free, columnar receptacles, one rising with each loculament from near the base of the dissepiment. Capsule ovate, compressed, channelled on both sides, crowned by the persisting, indurated calyx, bivalvular, bilocular, opening by a division of the dissepiment; valves boat-shaped, nerved, and each splitting into 2 teeth at the apex. Seeds brown, round, flattened, and surrounded by a membranous wing. *Hooker.* — The bark of the root is esteemed in Brazil a most valuable remedy in dropsy and dysentery. It is given in powder in doses of ½ to 1½ drachm. It acts as an emetic.

PINCKNEYA.

Calyx 5-parted, the fifth lobe expanded into a coloured leaf. Corolla with a cylindrical tube, and a 5-cleft limb, the lobes of which are recurved and spreading. Stamens inserted at the base of the tube, exserted; anthers oblong. Capsule roundish, compressed, 2-celled, dehiscing through the cells. Seeds surrounded by a wing, which is emarginate at the base.

863. P. pubens *Mich. fl. bor. amer* i. 103. t. 13. *Elliott sketch.* i. 268. *DC. prodr.* iv. 366. — C. caroliniana *Poir. dict.* vi. 40. — Wet boggy soils in South Carolina and Florida, along the sea coast.

A large shrub, 15–20 feet high; young branches downy. Leaves lanceolate, slightly acuminate, hairy, but shining above, downy beneath; petioles about an inch long, downy. Panicles terminal and axillary, composed of 5 flowered fasicles. The large leaf of the calyx veiny, and rose-coloured; sometimes 2 lobes are enlarged. Corolla downy, the tube dull green, the border purple, with obtuse segments. — Bark febrifugal, and used in Carolina as a substitute for Cinchona.

Tribe II. Gardenieæ.

Fruit baccate, 2-celled, or by abortion 1-celled. Cells many-seeded. Albumen fleshy. Seeds not winged. Trees or shrubs. Leaves opposite. Stipules between the petioles. DC.

RANDIA.

Limb of calyx 5-lobed. Corolla salver-shaped, with a short tube, and a 5-parted limb. Anthers inclosed, sessile, within the throat. Stigmas 2 thick. Berry nearly dry, crowned by the calyx, corticated, 2-celled, many-seeded. Seeds fixed to the central placenta, imbedded in pulp, and imbricated downwards. Spiny shrubs, with conspicuous flowers.

864. R. dumetorum *Lam. ill.* t. 156. f. 4. *DC. prodr.* iv. 385. — Canthium coronatum *Lam. dict.* i. 602. Gardenia dumetorum *Retz. obs.* ii. 14. *Roxb. corom.* t. 136. Gardenia spinosa *Linn. suppl.* 164. Randia spinosa *Blume bijdr.* 981. Posoqueria dumetorum *Roxb. fl. ind.* i. 714. — Common on the coast of Coromandel.

A thorny branching shrub or small tree. Leaves oval, rather blunt, cuneate at the base, smooth. Flowers very sweet-scented, sessile, solitary, mostly terminal. Calyx with oblong lobes rather shorter than the villous corolla. Fruit smooth, yellow, resembling a small crab-apple, firm, and fleshy. Seeds oval, numerous, lying in mucus. — The fruit when bruised and thrown into water intoxicates, or even kills fish, which are not considered less wholesome in consequence. In the form

of powder it is a powerful emetic. An infusion of the bark of the root is employed to nauseate in bowel complaints.

GARDENIA.

Calyx usually ribbed, with a tubular truncate limb, divided into several lobes or teeth. Corolla funnel-shaped or approaching salver-shaped, with a tube much larger than the calyx and a contorted spreading 5–9-parted limb. Anthers 5–9, linear, sessile in the throat. Stigma clavate, bifid or 2-toothed, with thick erect lobes. Dissepiments of the ovary 2–5, incompletely dividing it into cells. Berry fleshy, crowned with the calyx, with a papery or bony lining, incompletely 2–5-celled. Seeds immersed in fleshy parietal placentæ. — Trees or shrubs, armed or unarmed. Flowers axillary or terminal, usually solitary, white and fragrant.

865. G. campanulata *Roxb. fl. ind.* i. 710. *DC. prodr.* iv. 383. — Forests of Chittagong.

Trunk straight, but short, soon dividing and subdividing into numerous stiff, erect, and spreading branches. Bark of the old parts brownish-green, and pretty smooth; that of the tender parts lighter coloured; height of the shrub in 5 years, from 5 to 10 feet. Thorns single, short, strong, and sharp, generally terminating the little, lateral, opposite branchlets. Leaves opposite, short-petioled, broad-lanceolate, tapering most towards the base, entire, and smooth on both sides, from 2 to 5 inches long, and from 1 to 2 broad. Stipules triangular, acute. Flowers small, of a pale yellowish-white, short-peduncled, crowded on the extremities of short, rigid, lateral, spinous branchlets. Calyx cylindrical, 5-toothed. Corolla with a 5-sided, campanulate tube, and a border of 5 obliquely ovate segments. Anthers 5, sessile in the bell of the corolla. Ovary 1-celled, containing numerous ovules attached to generally 5 parietal receptacles. Style short. Stigma somewhat 5-grooved, and situated deep in the tube. Berry round-ovate, the size of a golden pippin, smooth, depressed, and slightly 5-furrowed at the apex and base; 1-celled; the exterior tunic thick, fleshy, yellowish, with slender, hard, longitudinal fibres interspersed, the inner tunic thin and firm, but not bony, the edges of which turn inwards in 5 lines, forming 5 parietal placentæ. Seeds minute, nidulant in a little yellow pulp. — The fruit is employed by the natives of India as a cathartic and anthelmintic. *Roxb.*

Tribe III. HEDYOTIDEÆ.

Fruit capsular, 2-celled, with a loculicidal dehiscence, or membranous and indehiscent; cells many-seeded. Seeds not winged. Albumen fleshy. — Shrubs or herbaceous plants. Leaves opposite. Stipules interpetiolar.

CONDAMINEA.

Calyx campanulate, 5-crenate or 5-toothed; limb deciduous. Corolla funnel-shaped, with a somewhat curved tube, which is a

little longer than the calyx, a dilated throat, and a 5-parted limb. Stamens inserted above the middle of the tube, or near the throat; anthers oblong-linear, bifid at the base, length of corolla. Stigma 2-lobed. Capsule turbinate, truncate, opening in the middle of the cells. Seeds numerous, very small, wedge-shaped. — American shrubs, with 2-parted, acuminate stipules, and terminal many-flowered corymbs.

866. C. corymbosa *DC. prodr.* iv. 402. — Macrocnemum corymbosum *Fl. peruv.* ii. 48. t. 189. *HBK.* iii. 399. — Hills and ravines of the Peruvian Andes; mountains of Huanuco; near Maraquita and Santa Anna in New Granada.

Leaves ovate-oblong, acuminate, cordate, sessile, plaited, coriaceous. Corymbs large, brachiate, trichotomous. Corolla purple externally, with the throat and filaments naked. Teeth of the calyx broad, short and blunt. — Bark febrifugal. The Bark gatherers of Peru are said by Ruiz and Pavon to use this plant for adulterating the samples of Cinchona. Its bark is only slightly bitter, and may be easily recognised by its being white inside, rather bitter and viscid.

OPHIORHIZA.

Tube of calyx short, turbinate, with a permanent 5-cleft limb. Corolla tubular, funnel-shaped, hairy inside, with 5 ovate lobes. Stamens enclosed in the tube. Style filiform, surrounded at the base by a cup; stigma 2-lobed, shorter than the corolla. Capsule broad, compressed, 2-lobed, crowned by the calyx. Seeds numerous, small, hexagonal.

867. O. Mungos *Linn. sp.* 213. *Roxb. fl. ind.* i. 701. *DC. prodr.* iv. 415. — Mungo *Kæmpf. amœn.* 573 and 577. — Java, Ceylon, Sumatra.

Stem suffruticose. Leaves stalked, oblong, entire, pointed, very thin, 4–6 inches long; petioles short, downy; stipules slight, membranous. Corymbs terminal, many-flowered. Tube of the corolla short, with the lobes oblong, and pointed. Cup of the style 2-lipped, thick, fleshy. Filaments very short, inserted at the base of the tube. Capsule inversely reniform, compressed, with 5 ribs proceeding from the lobes of the calyx. — The parts are so intensely bitter that the plant is called by the Malays, "Earth gall;" according to Kæmpfer the taste resembles Gentian, but is more penetrating and less unpleasant. It has the reputation of being a most powerful alexipharmic; but this requires confirmation.

OLDENLANDIA.

Calyx with a globose tube. Limb 4-toothed, permanent, the lobes very distant in the fruit. Corolla short, with a 4-cleft limb, and a villous or glabrous throat. Stamens a little exserted; anthers ovate or orbicular. Stigma undivided or bifid. Capsule nearly globose, crowned by the small, distant lobes of the calyx, dehiscing at the vertex by a loculicidal chink. Seeds nume-

rous, small, half immersed in a globose placenta. — Small herbaceous or suffruticose plants, resembling chickweed. Peduncles axillary or terminal, 1–2- or many-flowered; generally long and slender.

868. O. umbellata *Linn. sp. pl.* 174. *Roxb. corom.* i. t. 3. *Burm. fl. ind.* 37. *Roxb. fl. ind.* i. 421. *DC. prodr.* iv. 426. — Java, Coromandel, Mexico.

Root long, orange-coloured. Stem diffuse, 4-cornered, nearly smooth. Leaves narrow, linear, acute, recurved at the edge, roughish above, paler beneath, in threes or fours. Stipules ciliated with bristles. Peduncles axillary, somewhat umbellate. — The root is employed in Coromandel to dye the best and most durable red on cotton cloth. The leaves, according to Ainslie, are considered by the native doctors expectorant.

Tribe IV. Isertieæ.

Fruit drupaceous, containing several many-seeded stones. Albumen fleshy. — Shrubs or herbaceous plants. Leaves opposite. Stipules interpetiolar.

ISERTIA.

Limb of calyx 4–6-toothed, tube somewhat globose. Corolla with a long tube, 6-lobed at the apex, woolly inside, having the recesses between the lobes drawn out into crests. Stamens 6, inclosed. Stigmas stellate. Berry globose, crowned with the calyx, containing 6 triquetrous, brittle, many-seeded stones.— South American trees. Branches striated. Leaves velvety underneath. Stipules lanceolate subulate, 2 on each side. Thyrse terminal, many-flowered. Flowers scarlet.

869. I. coccinea *Vahl. ecl.* ii. 27. *DC. prodr.* iv. 437. — Guettarda coccinea *Aubl. guian.* i. 317. t. 123. — Guayana.

A small tree, with a trunk 10–12 feet high. Leaves decussating, smooth, oval, long-pointed, green above, ash-coloured underneath, with strong reddish veins. Stipules broad, quickly deciduous. Flowers in a large terminal panicle, with 3-flowered branches. Calyx purple, with a yellow firm 4-toothed limb. Corolla bright red, curved, about 2 inches long. Fruit red, succulent, the size of a cherry. — A decoction of the leaves employed by the Creoles as a fomentation to cure swellings. Its bark is considered febrifugal.

Tribe VII. Guettardeæ.

Fruit drupaceous, with many 1*-seeded stones. Seeds slender, long, generally erect. Albumen fleshy. — Shrubs or trees. Leaves opposite, rarely ternate, with interpetiolar stipules.*

NONATELIA.

Limb of calyx 5-toothed, permanent. Corolla tubular, funnel-

shaped, with a rather gibbous tube, and 5 lobes. Stamens 5, somewhat enclosed. Drupe globose, furrowed, with 5 stones. Albumen horny. — Shrubs or small trees, with terminal thyrses of white flowers.

870. N. officinalis *Aubl. guian.* i. 188. t. 73. *DC. prodr.* iv. 466. — Forests of Cayenne and Guayana.

A shrub 2 or 3 feet high. Stem knotty. Leaves smooth, ovate-lanceolate, subsessile, united at the base by a 4-toothed stipule on each side; teeth long and acute. Flowers in terminal corymbs, each subtended by 3 long scale-like bracts. Tube of the corolla very short, white, with 5 white lobes. Ovary surmounted by 5 yellow glands, from the midst of which the style is projected. Fruit black, spherical, succulent, with 10 streaks. — All the parts when bruised or dried give out a slight aromatic odour. The Creoles call the bush Azier à l'Asthme, because they find the infusion of the leaves an excellent remedy for that malady.

ANTIRRHŒA.

Limb of calyx campanulate, 4-toothed. Corolla tubular, 4-cleft, with the lobes shorter than the tube. Anthers nearly sessile in the throat, not exserted. Stigma bifid. Drupe somewhat baccate, crowned, containing a 2-celled stone; with 1-seeded cells. — Isle of France plants, with opposite or ternate leaves often having glandular hairs in their axils. Stipules interpetiolar. Peduncles axillary, shorter than the leaf, bifid, with the flowers, which are small and white, arranged unilaterally along the branches.

871. A. verticillata *DC. prodr.* iv. 459. — A. borbonica *Gmel. syst.* i. 244. Cunninghamia verticillata *Willd. sp. pl.* i. 615. Malanea verticillata *Lam. illustr.* t. 66. f. 1. — Isles of Bourbon and Mauritius.

Leaves 3 in a whorl, obovate-oblong, cuneate at the base, acuminate at the point, smooth on each side. Flowers hermaphrodite. Drupes oblong, the size of a grain of wheat. — Root and bark said to be powerfully astringent. In Bourbon it is employed as a styptic to restrain hæmorrhage, and is known by the name of *Bois de Losteau*.

Tribe VIII. PÆDERIEÆ.

Fruit 2-celled, indehiscent, scarcely fleshy; with the tube of the calyx forming a rind which readily separates from the carpels. Carpels compressed, 1-seeded, pendulous from a filiform axis. Albumen fleshy. — Climbing shrubs. Leaves opposite. Stipules interpetiolar.

PÆDERIA.

Calyx small, 5-toothed, permanent. Corolla funnel-shaped, hairy inside, 5-lobed, with a plaited æstivation. Stamens 5,

sometimes abortive; anthers oblong, nearly sessile in the middle of the tube. Style not protruded; stigma bifid. Berry small, roundish globose, becoming brittle, 2-celled, 2-seeded.

872. P. fœtida *Linn. mant.* 52. *Lam. illustr.* t. 166. f. 1. *Roxb. fl. ind.* i. 683. *DC. prodr.* iv. 471. — Apocynum fœtidum *Burm. fl. ind.* 71. Convolvulus fœtidus *Rumph.* v. t. 160. — Islands and continent of India; Japan.

Stem woody, twining when young, round and smooth. Leaves opposite, long stalked, oblong cordate, pretty smooth, entire; stipules broad cordate. Panicles axillary and terminal, brachiate. Flowers numerous, deep pink. Bracts ovate. Calyx 5-toothed. Corolla with the tube long, somewhat gibbous, and woolly inside; the limb narrow, divided into 5 cordate, crenulate segments. Filaments short, inserted irregularly about the middle of the tube; anthers erect, within the tube. Ovary turbinate, 2-celled; cells containing 1 ovule each, attached to the bottom of the cell; style single; stigma 2-cleft, with the lobes bent amongst the anthers. Berry dry, compressed, smooth, with 5 lines on each side; 1-celled, 2-seeded. Seeds compressed, smooth, enlarged, with a somewhat membranous ring all round. — Leaves very fœtid and alliaceous; yet they are used to impregnate baths, and in decoction are administered internally in retention of urine, and in certain febrile complaints. According to Roxburgh, the root is used by the Hindoos as an emetic.

Tribe IX. Coffeæ.

Fruit 2-celled, berried, with 2 bony or crustaceous 1-seeded nuts which are flat and furrowed in the inside; or occasionally, by abortion, having but 1 nut, and then the seeds are erect, depressed or laterally adherent. Albumen horny. — Trees or shrubs. Leaves opposite. Stipules interpetiolar united or distinct.

CANTHIUM.

Limb of calyx short, 4–5-toothed. Corolla with a short tube, a bearded throat, and a 4–5-lobed spreading limb. Anthers inserted in the throat, scarcely protruding. Style filiform, protruded. Stigma undivided, roundish-ovate or mitre-formed. Berry globose or didymous, crowned by the teeth of the calyx. — Asiatic or African shrubs, with spiny or unarmed branches. Peduncles axillary, short, many-flowered.

873. C. parviflorum *Lam. dict.* i. 602. *Roxb. corom.* i. 39. t. 51. *Roxb. fl. ind.* i. 534. — Webera tetrandra *Willd. sp. pl.* i. 1224. (*Rheede* v. 71. t. 36.) — A common bush throughout India.

A small, thorny bush. Leaves on the young shoots opposite, on the old ones fascicled, ovate, smooth; stipules subulate. Racemes opposite, below the thorns, small, about the length of the leaves. Peduncles and pedicels smooth, round. Flowers small, yellow. Drupe obcordate, laterally compressed a little with a hollow on each side, the size of a cherry, fleshy, smooth, yellow. — A decoction of the leaves or root is prescribed in India in certain stages of flux; and the latter

is supposed to be anthelmintic. The bark and young shoots are used in dysentery. *Ainslie.*

CHIOCOCCA.

Limb of calyx 5-toothed. Corolla funnel-shaped, with an obconical tube or throat, and a 5-lobed acute limb. Stamens 5, downy, hardly adnate to the bottom of the corolla; anthers linear, enclosed. Style clavate or 2-lobed at the apex. Berry somewhat didymous, compressed, crowned by the teeth of the calyx, with 2 papery 1-seeded stones. — Shrubs often with a somewhat scandent habit. Leaves ovate or oblong, smooth. Racemes axillary, simple or panicled. Flowers yellowish white.

874. C. anguifuga *Mart. spec. mat. med. bras.* xvii. t. 5. *DC. prodr.* iv. 482. — C. brachiata *Fl. peruv.* ii. 67. t. 219. *b.* C. racemosa *HBK.* iii. 352. C. parviflora and paniculata *Willd. in R. and S.* v. 203. — Woods of Brazil, Cayenne, Peru, and some of the West India Islands.

Root perpendicular, round, branched, as thick as the thumb, with a strong acrid fœtid smell when fresh, when dry having at first something the taste of coffee, but afterwards acrid and nauseous, stimulating the flow of saliva. Stems weak, erect, 6–10 feet high. Leaves opposite, stalked, ovate, broadly wedge-shaped or rounded at the base, tapering into a long narrow point, smooth and green on each side. Stipules short, truncate. Peduncles axillary, nearly horizontal, smooth or downy at the angles, branched. Pedicels somewhat secund. Berries roundish, compressed, smooth, 2–3 lines in diameter. — See next species.

875. C. densifolia *Mart. spec. mat. med. bras.* xvii. t. 6. *DC. prodr.* iv. 482. — Woods of Brazil, especially in the province of Bahia. (Cahinca.)

Root like that of the last. Trunk arborescent, 8–10 feet high. Branches horizontal. Branchlets spreading, straight, decussate. Leaves decussate, roundish-ovate or even cordate at base, acute, thickish, smooth on each side, shining deep green on the upper side. Stipules short, truncate with a mucro. Racemes axillary simple, secund. Common peduncle downy; pedicels smooth. Calyx 5-cleft, with linear-lanceolate acute erect segments. Corolla inflated, funnel-shaped, smooth, yellowish white, sometimes with a few purplish streaks in the throat; with the segments of the limb ovate, acute, inflexed. — The roots of these two species are employed with confidence by the natives of Brazil as a certain remedy for serpent bites. The infusion of the bark of the root produces the most violent emetic and drastic effects. In the words of Von Martius: "Ægrotus scilicet, e veneno languidus, soporosus, vix sui compos, ex quo medicinam sumserit, primum eructationibus creberrimis et tantis motibus convulsivis excruciatur, ut, licet exsanguis et quasi cum facie hippocratica, sub summâ virium labe, in lectulum corruisset, ne unicum quidem temporis momentum quietus maneri possit. Tandem post plurimos et visu terribiles spasmos universales et corporis volutationes, in enormes rapitur vomitus, quibus salivam, bilem, chymum, immo fœces largâ copiâ edit. Tunc accedunt

subitaneæ alvi excretiones fæcum quasi succo viscido involutarum quæ, si continua per aliquot temporis serie sese excipiant, cum visibili ægroti levamine, boni exitus pro indiciis habentur." Copious perspirations follow, and these are succeeded by a gentle sleep. The violent action of these roots renders them dangerous to employ, except in cases of poisoning, or in such maladies as require a prompt and complete evacuation of the intestines. They would possibly prove beneficial in hydrophobia, in the opinion of Von Martius. It has been introduced into European practice, and appears to be of the greatest use as a remedy in dropsy. See an excellent account by *Wood* and *Bache*, 2d edition, p. 200.

COFFEA.

Limb of calyx small, 4–5-toothed. Corolla tubular, funnel-shaped, with a 4–5-parted spreading limb. Stamens 4–5, inserted in the middle of the upper part of the tube, exserted or inclosed. Style bifid at the apex. Berry umbilicate, naked, or crowned with the calyx, containing 2 seeds enclosed in a parchment-like putamen. — Trees or shrubs.

876. C. arabica *Linn. sp.* 245. *Bot. mag.* t. 1303. *DC. prodr.* iv. 499. (*Fothergill's works.* ii. 279. t. 3.) — Low mountains of Arabia Felix. (Coffee.)

A large erect bush, quite smooth in every part. Leaves oblong-lanceolate, acuminate, shining on the upper side, wavy, deep green above, paler below. Stipules subulate, undivided. Peduncles axillary, short, clustered. Corolla white, tubular, sweet-scented, with a spreading 5-cleft limb. Anthers protruded. Berries oval, deep-purple, succulent, 2-seeded. — The albumen of the seeds constitutes the aromatic coffee of commerce, the agreeable stimulating effects of which after being roasted are well known. It has the power of removing drowsiness and of retarding the access of sleep for some hours. It has been prescribed medicinally in various derangements of the chylopoietic viscera, and in headachs resulting from indigestion.

PSYCHOTRIA.

Limb of calyx 5-lobed, or 5-toothed, or nearly entire. Corolla funnel-shaped, short, 5-cleft; limb spreading or recurved; throat bearded or glabrous. Stamens 5: anthers exserted or inclosed. Stigma bifid. Berry drupaceous, crowned by the limb of the calyx, becoming 10-ribbed when dry, with papery 1-seeded stones. Seed erect. Embryo cartilaginous. — Trees, shrubs, or herbaceous plants inhabiting æquinoctial regions. Flowers panicled or corymbose.

877. P. emetica *Mutis in Linn. f. suppl.* 144. *Humb. and Bonpl. pl. æquin.* ii. 142. and 126. — Cephælis emetica *Pers. synop.* i. 203. — New Granada.

Root perpendicular, knotted, branched, with a slender axis, and a thick friable bark. An erect, simple, hairy undershrub. Leaves oblong, acuminate, narrowed at the base, membranous, ciliated, hairy beneath. Stipules ovate, acuminate, very short. Peduncles axillary, few-flowered,

somewhat racemose. — The root possesses properties similar to those of Ipecacuanha. It is the *striated Ipecacuanha of* Guibourt and Mr. Pereira, &c., the *black* or *Peruvian Ipecacuanha* of others. It contains according to M. Pelletier 9 per cent. of Emetina.

878. P. noxia *Aug. de St. Hil. pl. rémarq. bras.* 234. t. 21. *B. DC. prodr.* iv. 508; is a reputed poison in Brazil.

PALICOUREA.

All as in Psychotria, except the corolla, which is tubular and cylindrical, and a little gibbous at the base or curved, 5-cleft, bearded beneath the middle inside. The teeth of the calyx and the lobes of the corolla, sometimes rather unequal. — American shrubs usually destitute of pubescence. Leaves often whorled and of considerable size. Flowers yellow or white, in terminal sessile or stalked panicles, thyrses, or cymes.

879. P. Marcgraavii *Aug. de St. Hil. pl. rémarq. bras.* 231. t. 22. *A. DC. prodr.* iv. 525. — Erva do Rato *Marcgr. bras.* 60. f. 2. Galvania Vellozii *R. and S.* — Brazil in the woods of Minas Geraes and Pernambuco.

A shrub 5–6 feet high. Branches quadrangular, smooth. Leaves short-stalked, oblong, acuminate, obtuse at the base, smooth; stipules interpetiolar, trifid. Cymes terminal, stalked, solitary or occasionally 3 together. Pedicels downy. Calyx 5-toothed, downy. Corolla 5–7 lines long, slightly curved, gibbous at the base, roughly downy, yellowish saffron-coloured below, purplish above; closely bearded with hairs inside. Epigynous cup somewhat 2-lobed. Sometimes the leaves are downy underneath. — A poisonous plant, employed in Brazil to kill rats and mice. Very little is known of its real properties.

880. P. crocea *DC. prodr.* iv. 526. — Psychotria crocea *Swartz fl. ind. occ.* 429. (*Browne jam.* t. 13. f. 1.) — West India Islands.

Quite smooth. Leaves ovate or oval-lanceolate, acuminate, rather stiff. Stipules connected by a short ligula, two on each side, linear, acuminate, twice as short as the petiole. Panicle corymbose, terminal, saffron-coloured. Corolla obconical, tubular. Anthers projecting from the tube, shorter than the limb. Berry somewhat double, *DC.* — An emetic according to Von Martius.

881. P. speciosa *HBK.* iii. 368. *DC. prodr.* iv. 528. — New Granada, and Brazil. (Douradinha do Campo.)

Branches smooth, round. Leaves oblong, acuminate, acute at the base, membranous, roughish, shining; stipules smooth. Panicles stalked; their angular branches and corollas hairy and downy, *DC.* — The leaves have, by their yellow colour, obtained for the plant the name of Goldshrub, highly spoken of in Brazil as an antisiphilitic. The decoction, which in large doses forms a real poison, acts especially by an increased action of the skin and kidneys, and the digestion is not injured by moderate doses. *Martius.*

882. P. officinalis *Mart. in linnæa* 1830 *litt.* 39. *DC. prodr.* iv. 530. — Brazil.

All over rough with yellow down. Leaves narrow elliptical, short-stalked, either acute at the point or rounded with a mucro, rather narrowed to the base. Corymbs contracted into a panicle, *DC.* — Reputed to be, when administered in small doses, a powerful diuretic, and used both in human and veterinary medicine. *Burnett.*

883. P. diuretica *Mart.*
884. P. strepens *Mart.*
885. P. sonans *Mart.*
886. P. longifolia *HBK.*

} are said to have the same properties as the last.

CEPHÆLIS.

Heads of flowers inclosed in a large 2–8-leaved involucre. Limb of calyx very short, 5-toothed. Corolla funnel-shaped, with 5 small lobes. Anthers inclosed. Stigma bifid, usually exserted. Berry obovate-oblong, crowned with the remains of the calyx, 2-celled, 2-seeded. — Shrubs and herbs, natives of South America.

887. C. Ipecacuanha *Richard. f. bull. de la fac. med.* 1818. iv. 98. *Martius spec. mat. med. bras.* v. t. 1. *DC. prodr.* iv. 535. — Callicocca Ipecacuanha. *Broter. in linn. trans.* vi. 137. t. 11. —Woods of Brazil. Mountains of New Granada. (Ipecacuanha.)

Root perennial, simple, or divided into a few diverging branches, seldom more than from 4 to 6 inches long, about as thick as a goose-quill, ringed, when fresh pale brown, when dry umber-coloured, blackish umber-coloured, or greyish brown; the cortical integument with a reddish resinous glittering fracture, and readily separating from a central woody axis. Stem suffruticose, from 2 to 3 feet long, ascending, often rooting near the ground, smooth and cinereous at the base, downy and green near the apex. Leaves seldom more than 4–6 on a stem, opposite, oblong-obovate, acute, 3–4 inches long, 1–2 broad, roughish with hairs; petioles short, downy; stipules erect, appressed, membranous, 4–6-cleft. Peduncles solitary, axillary, downy, erect when in flower, reflexed when in fruit, about 1½ inch long. Flowers capitate; involucre 1-leafed, spreading, deeply 4–6-parted, with obovate, acuminate, ciliated segments. Bracts to each flower one, obovate-oblong, acute, downy. Calyx minute, obovate; with 5 bluntish short teeth. Corolla white, funnel-shaped; tube cylindrical, downy on the outside and at the orifice; limb shorter than the tube, with 5 ovate reflexed segments. Stamens 5; filaments filiform, white, smooth, anthers linear, longer than the filaments, projecting a little beyond the corolla. Ovary with a fleshy disk at the apex; style filiform; stigmas 2, linear. Berry ovate, about the size of a kidney bean, dark violet, crowned by the small calyx, 2-celled, 2-seeded, with a longitudinal fleshy dissepiment. Nucules plano-convex, furrowed on the flat side. — The well-known emetic root called Ipecacuanha is obtained from this plant. In commerce it is called the *annulated*, *Brazilian* or *Lisbon Ipecacuanha*, to distinguish it from the roots of other emetic plants also collected in Brazil for official use. It is chiefly used as an emetic, sudorific and expectorant. Its powder acts upon the respiratory passages as an irritant, producing spasmodic asthma. In some cases the mere odour of the root seems sufficient to excite difficulty of breathing, with a feeling of suffocation. *Pereira.*

888. C. punicea *Willd. sp. pl.* i. 977. of Jamaica;

889. C. muscosa *Swartz fl. ind. occ.* 442, of the West Indies; are also emetic according to Von Martius.

GEOPHILA.

Limb of calyx 5-parted with linear spreading segments. Corolla tubular, with a pilose throat, and 5 rather recurved lobes. Anthers 5, inclosed. Stigma bifid. Berry ovoid, angular, crowned by the calyx, 2-celled, 2-seeded. — Creeping herbaceous plants. Leaves stalked, cordate, like those of a violet. Stipules solitary, undivided. Flowers in subsessile umbels, with involucrating bracts shorter than the flowers.

890. G. reniformis *Cham. and Schlecht. Linnæa* 1829. p. 137. *DC. prodr.* iv. 537. — Psychotria herbacea *Linn. sp.* 245. *Jacq. amer.* t. 46. Psychotrophum herbaceum *Browne Jam.* 161. Cephaelis reniformis *HBK.* iii. 377. — Moist shady places in the hotter parts of America; Havannah, Jamaica, Porto Rico, Brazil, the Oronoco.

A small plant, with a creeping filiform stem, from which rise branches about 3 inches long, each simple, erect, and having about 4 leaves. Leaves roundish, cordate, obtuse; the petioles of the lower ones very long, hairy. Peduncles terminal, 2–3–6-flowered, shorter than the leaves. Corolla white, erect, with the tube twice as long as the spreading limb. Berries red and succulent. — Root emetic; used as a substitute for Ipecacuanha.

891. G. macropoda *DC. prodr.* iv. 537; or Psychotria macropoda *Fl. Peruv.* ii. 63. t. 211. f. 6. the P. cordifolia *Dietr. gart. lex.* i. 618 — is also emetic according to Von Martius.

Tribe X. SPERMACOCEÆ.

Stigma of 2 plates. Fruit dry, or scarcely fleshy, consisting of 2, rarely 3–4 carpels, either united or separable, and indehiscent or dehiscent in various ways. Albumen between fleshy and horny. — Shrubs or herbaceous plants. Leaves opposite. Stipules membranous at the base, usually split into numerous setaceous lobes.

BORRERIA.

Limb of calyx permanent, 2–4-toothed. Corolla salver-shaped or funnel-shaped, 4-lobed. Stamens 4, exserted or inclosed. Stigma bifid or undivided. Capsule crowned by the calyx, 2-celled, dehiscing at the apex through the dissepiment when ripe; carpels 1-seeded, opening by a longitudinal chink inside. Seeds furrowed along their face. — Herbaceous or suffruticose plants. Stems and branches usually square. Flowers small, white, or blue, axillary or terminal, whorled, in cymes or corymbose.

892. B. ferruginea *DC. prodr.* iv. 547. — Spermacoce ferruginea *Aug. de St. Hil. pl. us.* 13. t. 13. — Pastures in Brazil, in the provinces of the Mines and St. Paulo.

Stem hard, erect, branched, herbaceous. Branches quadrangular, hairy with rufous down. Leaves oblong, acute, obliquely 3–4-veined, scabrous above, pale beneath and rough with hairs on the principal veins. Stipules with their bristles as long as the sheath. Whorls of flowers globose, terminal and axillary. Flowers pink or white, with their lobes hairy at the apex. Capsule downy, crowned with the 4 subulate teeth of the calyx. — Root emetic like that of Cephælis Ipecacuanha.

893. B. Poaya *DC. prodr.* iv. 549. — Spermacoce Poaya var. *α Aug. de St. Hil. pl. us. bras.* t. 12. — Upland plains in the Province of Mines in Brazil, common.

Quite smooth. Stem herbaceous, simple, 4-cornered. Leaves sessile, oblong-elliptical, acute, with 6 oblique veins on each side. Stipules split into numerous long bristles, Flowers blue, with the points of the lobes hairy. Whorls capitate, sessile, axillary, few in number, the upper one the largest. Lobes of calyx 4, linear-lanceolate, acute, longer than the ovary. Corolla nearly smooth. Anthers protruding. — Root emetic, substituted for Ipecacuanha. Leaves at first sweet, but afterwards acid; a decoction of them is used in the cure of colic.

RICHARDSONIA.

Limb of calyx of 4–7 unequal teeth, without any intermediate accessory ones. Corolla funnel-shaped, with an obconical tube, and a 3–5-lobed spreading valvate limb. Stamens 3–5, exserted. Style 3–4-cleft at the apex. Capsule at first crowned by the calyx; afterwards cut round the base and dropping off; containing 3–4 1-seeded membranous indehiscent kernels. Seeds solitary, peltate. — Decumbent American herbaceous plants. Roots woody, nearly simple. Stipules multifid. Flowers capitate.

894. R. scabra *Mart. spec. mat. med. bras.* x. t. 9. f. 13 and 14. *Aug. de St. Hil. pl. us. bras.* t. 8. *DC. prodr.* iv. 567. — Richardia scabra *Willd.* ii. 222. Richardia brasiliensis *Gomez mem. Ipecac. c. ic.* Richardsonia brasiliensis *Virey in Dict. sc. med.* vi. 345. *c. ic.* Richardia pilosa *HBK.* iii. 350. t. 279. Spermacoce hexandra *Ach. Rich. hist. nat. ipecac.* p. 13. Spermacoce hirsuta *R. and S.* iii. 531. — Brazil, New Granada, Vera Cruz, Peru, &c.

Stems prostrate or ascending, a foot and more long, hairy, branched near the ground. Leaves obovate, obtuse or apiculate, ovate, or oblong, pale green, rough with whitish hairs. Flowers white, 20 or more in a hemispherical head, surrounded with 3 or 4 floral leaves like those of the stem. Calyx-teeth 6, triangular, nearly equal, membranous and hairy at the edge. Corolla slightly ventricose in the middle. — The root is imported as a substitute for Ipecacuanha, and forms the *undulated*, *amylaceous*, or *white* Ipecacuanha of pharmaceutical writers. It does not contain, according to Pelletier, more than 6 per cent. of Emetina.

895. R. rosea *Aug. de St. Hil. pl. us. bras.* t. 7. *DC. prodr.* iv. 568. — R. emetica *Mart. spec. mat. med. bras.* 11. t. 9. f. 19. — Brazil, in sandy places in the provinces of St. Paulo, Rio Janeiro, and the Mines.

Stems spreading, round, a span long, hispid with white spreading hairs. Leaves short-stalked, ovate-lanceolate, cuneate at the base, slightly hairy, with a short acute point. Stipules very hairy. Flowers pink, arranged in a hemispherical, terminal head, surrounded by about 4, ovate-acuminate, cordate leaves. Calyx hispid, with linear acute ciliated segments. Corolla 3 times as long as the calyx, ventricose, funnel-shaped, with 6 ovate triangular acute spreading segments which are hairy at the points. — Von Martius speaks highly of the excellence of the root of this plant as an agreeable emetic in doses of 1 or 2 drachms.

CAPRIFOLIACEÆ.

Nat. syst. ed. 2. p. 247.

TRIOSTEUM.

Calyx with an ovate tube and a 5-parted permanent limb, with linear-lanceolate permanent segments. Corolla gibbous at the base, almost equally 5-lobed, tubular, longer than the calyx. Stamens 5, inclosed. Stigma oblong, thick. Berry coriaceous, obovately triquetrous, crowned by the calyx, 3-celled, 3-seeded.

896. T. perfoliatum *Linn. sp. pl.* 250. *Bigelow med. bot.* i. t. 9. *DC. prodr.* iv. 330. — United States, borders of woods, rare; called "Fever Root" and "Wild Ipecac."

Root perennial, subdivided into numerous horizontal branches. Stem erect, hairy, fistular, round, from 1 to 4 feet high. Leaves opposite, the pairs crossing each other, ovate-lanceolate, acuminate, entire, rather flat, abruptly narrowed at the base into a winged petiole, and more or less connate. Flowers axillary, sessile, 5 or 6 in a whorl, the upper ones generally in a single pair. Each axil is furnished with 2 or 3 linear bractes. Calyx 5-parted; segments spreading, linear, coloured, unequal, persistent. Corolla tubular, curved, dull brownish purple, covered with minute hairs, its base gibbous, its border open and divided into 5 rounded, unequal lobes. Stamens 5, inserted on the tube of the corolla, hairy, with oblong anthers. Ovary inferior, roundish; style longer than the corolla; stigma peltate. Fruit oval, baccate, of a deep orange yellow, hairy, somewhat 3-sided, crowned with the calyx, containing 3 cells and 3 hard bony, furrowed seeds. — Bark of the root emetic and cathartic; leaves diaphoretic. The efficacy impaired by age; should be kept in closely stopped jars, and renewed annually.

SAMBUCUS.

Limb of calyx 5-cleft. Corolla rotate, urceolate, 5-cleft.

Stamens 5. Stigmas 3, sessile. Berry roundish, pulpy, 1-celled, 3–4-seeded, hardly crowned by remains of the calyx.

897. S. Ebulus *Linn. sp.* 345. *Eng. Bot.* t. 475. *Eng. Fl.* ii. 109. *DC. prodr.* iv. 322. — Most parts of Europe in cultivated ground. (Dwarf Elder.)

Root fleshy, creeping, difficult of extirpation. Stems annual, simple, erect, leafy, about a yard high, roundish, though very deeply and unequally furrowed. Leaves dark green, nearly smooth, with ovate-lanceolate, acute, sharply serrated leaflets, unequal at their base, some of them 4 or 5 inches long. Stipules large, leafy, cut, sometimes accompanying 2 or 3 of the lowest pairs of leaflets, as well as the main footstalk. Cymes first 3-cleft, then variously and copiously branched, hairy. Flowers all stalked, of a dull purplish hue, with thick, upright, white filaments, whose anthers are reddish. Berries globose, black, not always perfected. Seeds 3 or 4. *Smith.* — Roots cathartic.

898. S. nigra *Linn. sp.* 385. *Eng. Bot.* t. 476. *Eng. Fl.* ii. 109. *DC. prodr.* iv. 322. — Common in Europe, the Caucasus, Siberia, and even Japan. (Common Elder.)

A small tree or large bush. Stem much and irregularly, though always oppositely, branched, of quick growth; branches after a year's growth, clothed with smooth grey bark, and filled with a light spongy pith. Leaflets deep green, smooth, usually 2 pairs, with an odd one. Cymes large, smooth, of numerous cream-coloured flowers, with a sweetish but faint and heavy smell; some in each cyme sessile. Berries globular, purplish-black; their stalks reddish. — The inspissated juice of the fruit is regarded as cooling, laxative, and diuretic. The inner bark is purgative, or in large doses emetic. The flowers are diaphoretic, and in French pharmacy are commonly employed as expectorants.

GALIACEÆ, OR STELLATÆ.

Nat. syst. ed. 2. *p.* 249.

RUBIA.

Limb of calyx hardly any. Corolla rotate, 5-parted. Stamens 5, short. Styles 2, short. Fruit didymous, globose, baccate, juicy.

899. R. tinctorum *Linn. sp. pl.* 158. *Lam. ill.* t. 60. f. 1. *DC. prodr.* iv. 589. *Decaisne récherches.* p. 58. — Levant, and the South of Europe. (Madder.)

Stem diffuse, brittle, branched, angular, very rough, with sharp hooks. Leaves 4–6 in a whorl, lanceolate or oblong-lanceolate, mucronate, somewhat membranous, with pinnated veins. Flowers small, white. Lobes of the corolla ovate-lanceolate, apiculate. Anthers ovate oblong. Stigmas conical. — Chiefly used as a valuable dying root. Said however to be tonic, diuretic and emmenagogue.

ASPERULA.

Limb very short, 4-toothed, deciduous, or obsolete. Corolla funnel-shaped, rarely campanulate, 4-cleft, rarely 3-cleft. Styles 2, joined at the base, and sometimes nearly to the apex. Fruit didymous, not crowned with the calyx, almost dry.

900. A. odorata *Linn. sp.* 150. *Eng. Bot.* t. 755. *Smith Eng. Fl.* i. 197. — In woods throughout Europe. (Woodroof.)

Root creeping. Stems simple, annual, a span high, angular, smooth, leafy. Leaves 7–9 in each whorl, usually 8, bright green, spreading, about an inch long, rough at the edges only. Panicles generally 3 together, on longish stalks, forked, not much subdivided. Flowers pure white, with a short tube; fragrant chiefly at night. Fruit rough, with ascending bristles. — The herb while drying has the scent of new hay, approaching to bitter almonds, or Heliotropium peruvianum, of which it retains a portion some time. *Smith.* — It passes for a diuretic.

ASTERACEÆ.

Nat. syst. ed. 2. p. 253.

VERNONIA.

Head few or many-flowered, equal flowered. Involucre imbricated, shorter than the florets, with the inner scales longest. Receptacle naked, or rarely honey-combed and fringed. Corolla regular, 5-cleft, with the lobes in the entire part nearly equal. Filaments smooth. Achænium with a cartilaginous callus at the base, and a large epigynous disk. Pappus usually in 2 rows, of which the inner is setiform and much longer than the outer which is paleaceous; rarely in 2 equal rows. *DC.*

901. V. anthelmintica *Willd.* iii. 1634. *DC. prodr.* v. 61.— Conyza anthelmintica *Linn. sp. pl.* 1207. Serratula anthelmintica *Roxb. fl. ind.* iii. 405. Ascaricida indica *Cass. dict.* iii. *suppl.* p. 38. (*Burm. zeyl.* t. 95. *Rheede* ii. t. 24.) — Common among rubbish, and in dry uncultivated ground in the East Indies.

Stem erect, branched, round, clouded with elevated purple spots, slightly downy, 2–3 feet high. Leaves ovate or oval-oblong, acuminate at each end, coarsely serrated, downy. Heads corymbose, each containing 40–45 florets. Scales of involucre lanceolate-linear, acute; the outer somewhat spreading, leafy, and obovate-linear. Achænia oblong, taper, hispid. Outer row of pappus very short and paleaceous. — The fruit is accounted in India a very powerful anthelmintic.

ELEPHANTOPUS.

Heads containing 3–4–5 florets, equal-flowered, closely collected into a cluster surrounded by leaves. Involucre compressed, in 2 rows; leaflets dry, oblong, alternately flat and folded, the inner usually 3-nerved. Receptacle naked. Corolla palmate, with a 5-cleft limb, which has acuminate segments, and 1 recess deeper than the others. Filaments smooth; branches of style half-subulate. Achænium rather compressed, many ribbed, oblong, hairy. Pappus in 1 row, consisting of several straight paleæ, dilated at the base, but otherwise very narrow, acuminate, equal, and serrated. *DC.*

902. E. scaber *Linn. sp. pl.* 1313. *Roxb. fl. ind.* iii. 445. *DC. prodr.* v. 86. — (*Dill. elth.* 126. t. 106. *Breyn. ic.* 32. t. 34.) — Common in almost all parts of India, in a dry elevated soil.

Root fibrous, scarcely more than biennial. Stem hairy, dichotomously branched, round, about a foot high. Leaves chiefly radical, scabrous, crenated, cuneate, very much narrowed at the base; those of

the stem lanceolate. Floral leaves broadly cordate-ovate, acuminate, hoary. Heads on long stalks. Flowers pale red. — A decoction of the leaves and roots are given on the Malabar coast in cases of dysuria.

PIQUERIA.

Head 4–5-flowered. Involucre oblong, consisting of 4–5 leaves in a single row. Receptacle small, naked, flat. Tube of corolla short, somewhat dilated, usually hairy. Terminal appendage of the anthers scarcely any. Branches of the style obtuse. Achænia when young compressed, when old 5-angled, smooth, and jointed with a short stalk. *DC.*

903. P. trinervia *Cav. ic.* iii. 19. t. 235. *Jacq. ecl.* i. 70. t. 48. *DC. prodr.* v. 104. — Ageratum febrifugum *and* Stevia febrifuga *Moç. and Sessé.* — Mexico; rocks near Santa Rosa de la Sierra, Xalapa, and many other parts where it is called Xoxonitztal and Yoloxiltic.

A small herbaceous plant. Leaves ovate- or oblong-lanceolate, subserrated, 3-nerved. Panicle corymbose, lax, many-headed. Heads 4-flowered. Tube of the corolla shaggy. Scales of the involucre obtuse, mucronate. Florets white. — Used in Mexico as a remedy in intermittent fevers.

LIATRIS.

Heads 5–30-flowered. Involucre imbricated, in a few rows. Receptacle naked. Corolla tubular, enlarged at the throat, with long lobes. Branches of style cylindrical, much protruded. Achænium with about 10 ribs, somewhat cylindrical. Pappus in 1–3 rows, consisting of feathered or bearded bristles.

904. L. squarrosa *Willd.* iii. 1634. *Hook. fl. bor. am.* i. 306. *Elliott sketch* ii. 282. *DC. prodr.* v. 129. *Pursh* ii. 509. — Serratula squarrosa *Linn. sp. pl.* 1147. (*Dill. elth.* t. 71. f. 82.) — North America from Canada to Carolina in dry Pine barrens.

Root tuberous, perennial. Stem 2–3 feet high, pubescent, rather rough, leafy, not branched. Leaves very long, linear, nerved, roughish at the edge, sometimes ciliated. Heads few, racemose, solitary at the end of a leafy peduncle. Involucre cylindrical, either smooth or downy, with lanceolate, rigid, spreading scales, the ends of which are leafy. Flowers bright purple. Achænia striated, hairy, crowned with a purplish-brown conspicuous pappus. — Known in the Southern parts of America by the name of *Rattlesnake's master*. In case of being bitten by this animal they bruise the roots and apply them to the wound, while at the same time the patient drinks a decoction of it in milk. *Pursh.* The roots have a terebinthinous odour, and are reputed to be powerfully diuretic, and hence antisiphilitic.

It is probable that other species of this genus possess similar properties, at least that of being diuretic.

905. L. scariosa *Willd.* and 906. L. odoratissima *Willd.* in particular, deserve to become the subjects of inquiry.

EUPATORIUM.

Heads 3–100-flowered. Receptacle flat, naked. Involucral scales in 1, 2, or more rows, equal or unequal, loosely or closely imbricated. Throat of corolla hardly dilated. Anthers inclosed. Arms of the style protruding, cylindrical, obtuse. Achænium angular or striated. Pappus in 1 row, hairy, rough. *DC.*

907. E. perfoliatum *Linn. sp. pl.* 1174. *Bigelow med. bot.* t. 2. *DC. prodr.* v. 151. — E. connatum *Michaux fl. bor. am.* ii. 99. — Meadows and boggy soils in North America; vulgarly called "Thorough wort, Thorough wax, Cross wort, Bone set."

Stems erect, round, hairy, branched at the top only. Leaves connate, linear-lanceolate, acuminate, decreasing gradually in breadth from the stem, where they are widest, to the extremities, serrated, wrinkled, pale underneath, and hairy, especially on the veins. Flowers in corymbs with hairy peduncles. Involucre cylindrical, imbricated, 12–15-flowered; the bracts lanceolate, acute, hairy. Florets tubular, with 5 spreading segments, with a rough down-like pappus. Style filiform, divided into 2 filiform acuminate branches, which project beyond the corolla. Fruit oblong on a naked receptacle. — All the parts bitter; a decoction of the leaves the most active form. A valuable tonic stimulant; used as a substitute for Peruvian bark in the cure of intermittent fevers in the United States. In large doses, in warm infusion or decoction, emetic, sudorific, and aperient. A good substitute for Chamomile flowers in facilitating the operation of an emetic.

908. E. Ayapana *Vent. malm.* t. 3. *DC. prodr.* v. 170. — E. triplinerve *Vahl. symb.* iii. 97. — South America, on the right bank of the Amazons, and elsewhere, whence it has been carried into the East Indies.

Stem suffruticose at the base, ascending, branched, smooth. Leaves subsessile, opposite, lanceolate, triple-nerved, acuminate, nearly entire, smooth. Corymb loose, few-headed. Heads pedicellate, each containing about 20 florets. Scales of the involucre in about 1 row, linear, acuminate, unequal, downy at the back. — The infusion of this plant is said to be a powerful sudorific, and alexipharmic. L'Heritier recommends it as an antidote against the bite of venomous serpents and malignant insects. For this purpose it is used in Brazil. A quantity of the bruised leaves, which is to be frequently changed, is laid on the scarified wound, and some spoonfuls of the expressed juice are from time to time administered to the patient, till he is found to be free from the symptoms, particularly the dreadful anxiety which follows the wounds of venomous reptiles. *Martius.*

MIKANIA.

Head 4-flowered. Receptacle naked, narrow. Involucral leaves 4, with a bractlet added at the base or below it. Tube of corolla short; throat dilated and somewhat campanulate. Anthers somewhat protruded. Achænium angular. Pappus in 1 row, rough and hairy. *DC.*

909. M. officinalis *Martius travels in Braz. Eng. ed.* 1. 327. *DC. prodr.* v. 189. — Brazil. (Coraçoa de Jesu.)

Erect, smooth. Stem nearly simple. Leaves decussating, somewhat triangular-ovate, cordate with a great sinus, toothed at the sides, entire towards the point, drooping. Panicles corymbose, terminal. — The leaves of this beautiful plant have an agreeable mixture of bitter, mucilaginous, and aromatic ingredients, and are therefore used, with great success, like Peruvian bark and cascarilla. It is said to be particularly efficacious as well in remitting fevers, as in weakness of digestion. It is taken both in decoction and extract. *Martius.*

910. M. Guaco *Humb. and Bonpl. pl. æq.* ii. 84. t. 105. *DC. prodr.* v. 193. — Hot damp places in South America on the banks of the River Magdalena. (Guaco.)

An herbaceous twining plant. Branches round, sulcate, hairy. Leaves stalked, ovate, somewhat acuminate, shortly narrowed at the base, remotely toothed, netted, roughish above, hairy beneath. Corymbs axillary, stalked, opposite. Heads somewhat ternate, sessile. Bractlets linear, shorter than the involucre. Involucral scales linear-oblong, obtuse, downy. Achænia smooth. — Reputed in South America to be a powerful remedy for the wounds of venomous serpents; the imported extract having been tried in this country against hydrophobia has produced no effect; and the remedy has fallen into disrepute. But it may lose its active principles by keeping. Dr. Hancock however asserts that the real alexipharmic Guaco is an Aristolochia.

911. M. opifera *Martius travels in Braz. Eng. ed.* i. p. 327. *DC. prodr.* v. 197. — Brazil. (Erva da Cobra.)

A smooth climbing plant. Stem angular. Leaves stalked, cordate, acuminate, repand-toothed or nearly entire, when full grown rather blunt. Heads stalked, in corymbose panicles. Involucral scales oblong, rather acute. Bractlets lanceolate, involute, rather shorter. — The expressed juice is used externally and internally, and the bruised bark, moistened with oil, is applied as a poultice, in case of wounds caused by the bite of venomous serpents. It is said to effect a cure by its powerful diuretic action. See on this subject, Gomez, in the Memoirs of the Royal Academy of Lisbon, 1812. ii. p. 23., where the plant is described as *Eupatorium crenatum. Martius.*

ADENOSTYLES.

Head few-flowered, discoidal. Receptacle narrow, naked. Involucral leaves few, in a single row, forming a cylinder. Corolla tubular, with a campanulate 5-toothed limb. Arms of the style very long, semicylindrical, covered all over with papillose glands. Achænium taper, striated. Pappus in several rows, consisting of rough hairs. *DC.*

912. A. glabra *DC. prodr.* v. 203. — Cacalia alpina β *Linn. sp. pl.* 1170. Cacalia glabra *Vill. dauph.* iii. 170. C. alliariæfolia *Lam. dict.* i. 532. C. alpina *Jacq. fl. austr.* t. 234. Adenostyles viridis *Cass. dict.* i. *suppl.* p. 59. A. alpina *Bluff. and Fingerh. comp.* ii. 329. — Alps of France, Germany, Italy, and even on the mountains of Sicily.

An herbaceous perennial. Leaves stalked, cordate, toothed, smooth on both sides; petioles half amplexicaul, but not furnished with appendages at the base. Corymbs fastigiate. Heads 3–6-flowered. — The leaves have been recommended in coughs.

TUSSILAGO.

Head many-flowered, heterogamous; florets of the ray ♀, in many rows, very narrowly ligulate; of the disk ♂, few in number, tubular, with a campanulate 5-toothed limb. Receptacle naked. Involucral scales in about 1 row, oblong, obtuse. Anthers scarcely tailed. Styles of the disk inclosed, abortive; of the ray bifid, with taper arms. Achænium of the ray oblong-cylindrical, smooth, of the disk abortive. Pappus of the ray in many rows, of the disk in 1 row, consisting of very fine setæ. *DC.*

913. T. Farfara *Linn. sp. pl.* 1214. *Eng. Bot.* t. 429. *Smith Eng. Fl.* iii. 425. *DC. prodr.* v. 208. — Various parts of Europe, the Crimea, Persia, Siberia, the East Indies, from the sea shore to elevations of nearly 8000 feet. (Coltsfoot.)

Rhizoma mucilaginous, bitterish, creeping horizontally, with many fibres. Flower-heads coming before the leaves; drooping in the bud, bright yellow, about an inch broad; the rays spreading, copious, very narrow. Each flower-head on a simple, round, woolly, radical stalk, scaly with numerous, reddish, smooth, scattered bracteas, crowded under the head, like an exterior involucre. Leaves erect, on furrowed, channelled footstalks, heart-shaped, slightly lobed, copiously and sharply toothed; very smooth, of a slightly glaucous green above; pure white and densely cottony, with prominent veins, beneath; when young they are revolute, and thickly enveloped in cottony down. — The leaves either smoked like Tobacco, or taken in infusion, have been employed against dyspnœa. It is a demulcent bitter and acts by soothing irritation of the air passages. Mr. Pereira calls it a very slight tonic.

ERIGERON.

Head many-flowered, radiant; ligulæ ♀, in several rows, linear, as long, or longer than the disk; florets of the disk tubular, regular, either all ♂; or the outer ♀ and the central ♂, or perhaps ♂ by abortion. Receptacle naked, dotted, with the sockets of the florets fringed. Achænium compressed, not naked. Pappus hairy, rough, in 1 row, (or in 2 rows ? the innermost being very short.) *DC.*

914. E. philadelphicum *Linn. sp. pl.* 1211. *Pursh.* ii. 533. *Elliott sketch* ii. 396. *DC. prodr.* v. 285. — E. amplexicaule *Poir. suppl.* v. 464 — Common in North America, in pastures and fields from Canada to Carolina.

Root perennial. Stem 1–2 feet high, slightly furrowed, downy with spreading hairs. Leaves of the root cuneate-obovate, sometimes deeply sinuate, the upper becoming gradually entire, oblong-lanceolate, and amplexicaul. Involucral leaves subulate. Heads in a loose corymb.

Florets of the ray 1–200, pale purple, slightly bifid. Achænia oblong hispid. — Said to be a powerful emmenagogue. It is commonly used in the United States as a diuretic.

STENACTIS.

Head many-flowered, heterogamous; florets of the ray in 1 row, ♀, narrow, ligulate; of the disk ♂, 5-toothed. Receptacle naked, dotted, flat, or convex. Involucral leaves in 2–3 rows, imbricated, narrow. Achænium oblong, compressed. Pappus of the ray in 1 row, setaceous, deciduous; of the disk in 2 rows, the outer very short, the inner like that of the ray. *DC.*

915. S. annua *Nees ast.* 273. *DC. prodr.* v. 298. — Erigeron heterophyllum *Willd.* iii. 456. Aster annuus *Linn. sp. pl.* 1229. *Fl. dan.* t. 486. Erigeron annuum *Pers. syn.* ii. 431. Phalacroloma acutifolium *Cass. dict.* xxxix. 405. — Common in North America whence it has migrated into Europe.

Stem erect, corymbose, many-headed. Lower leaves ovate; upper lanceolate, dentate-serrate, rather hairy. Involucre hispid. Ligulæ white. — Employed in the United States as a diuretic.

SOLIDAGO.

Head several-flowered or many-flowered, radiant; ligulæ 5–15, oblong, ♀, in 1 row, often wide apart; florets of the disk ♂, 5-toothed. Receptacle not paleaceous, either quite naked, or honeycombed, or fringed. Involucre closely imbricated, many-leaved, often oblong. Achænium rather taper, many-ribbed. Pappus in 1 row, hairy, roughish. *DC.*

916. S. odora *Ait. hort. Kew.* iii. 214. *Bigelow med. bot.* i. t. 20. *DC. prodr.* v. 334. — S. retrorsa *Mich. fl.* ii. 117. — Woods and fields in North America. (Golden rod.)

Root woody, much branched and creeping. Stem slender, from 2 to 3 feet high, smooth or slightly pubescent below, pubescent at top. Leaves linear-lanceolate, closely sessile, broad at base, entire, acute, with only the midrib distinct, rough at the margin but otherwise smooth, and covered with pellucid dots like Hypericum perforatum. Raceme compound, paniculed, with each of its branches supported by a small leaf. Branches very slender, rigid, ascending, very much spreading, 1-sided. Scales of the involucre oblong, acute, smooth, or slightly pubescent, the lower ones shorter and closely imbricating the rest. Florets of the ray few, with oblong obtuse yellow ligules; those of the disk funnel-shaped, with acute segments. — Leaves delightfully fragrant, partaking of anise and sassafras, yielding a volatile oil which is aromatic, gently stimulant, diaphoretic and carminative. Also employed as an excellent substitute for tea.

GRANGEA.

Head many-flowered, homogamous; florets all tubular; those of the ray in 2 or more rows, ♀, very slender, 3-toothed; of

the disk ♂, 5-toothed. Involucral scales oblong, obtuse, in 2 rows. Receptacle hemispherical. Anthers not tailed. Style of the ray bifid, of the disk undivided. Achænium obovate, laterally compressed a little, tapering to the base, extended at the apex beyond the seed so as to form a kind of cup beneath the flower. Pappus very small, pilose-toothed, placed on the margin of the cup. *DC.*

917. G. maderaspatana *Poir. dict. suppl.* iii. 825. *DC. prodr.* v. 373. — G. Adansonii *Cass. dict.* xix. 304. Artemisia maderaspatana *Linn. sp.* 1190. Cotula maderaspatana *Willd.* iii. 2170. — Various parts of the East Indies, especially about Madras and in Java.

A small, procumbent, spreading, hoary or hairy annual, quite shaggy about the extremity of the shoots. Leaves oblong, bipinnatifid, stalked; with obtuse lobes, with winged, semiamplexicaul petioles. Peduncles solitary, axillary, 1-headed, shorter than the petioles. Heads hemispherical. Florets yellow. — Leaves considered by the Indian doctors a valuable stomachic medicine; they are also sometimes used in anodyne and antiseptic fomentations.

BACCHARIS.

Heads many-flowered, dicœcious, with homogamous tubular florets. Receptacle naked, or in a few species rather paleaceous. Involucre somewhat hemispherical or oblong, imbricated in several rows. ♂. Corolla 5-cleft, dilated at the throat. Anthers protruded, not tailed. Style more or less abortive. ♀. Corolla filiform, somewhat truncate. Style bifid, projecting. Anthers altogether absent. Achænium usually ribbed. Pappus pilose; ♂ in 1 row, usually twisted or somewhat feathery, about as long as the involucre; ♀ in 1 or more rows, slender at the point, usually longer than the involucre. *DC.*

918. B. genistelloides *Pers. syn.* ii. 425. *DC. prodr.* v. 425. — Conyza genistelloides *Lam. dict.* ii. 93. Molina reticulata *Lessing in Linnæa* 1831, p. 143. not *R. and P.* — Peru and Brazil.

Stems with 3 decurrent leafy wings which are flat, veinless, short, or frequently interrupted. Leaves very small, reduced to sharpish somewhat ternate scales. Heads 1–2, in interrupted spikes. Involucre turbinate, with the scales all acuminate. Receptacle naked. Achænia smooth, subcylindrical, sulcate. — This and *B. venosa DC.*, a nearly allied species, are called in Brazil *Carqueja dolce*, and *C. amarga*. On account of the quantity of bitter extractive matter which they contain, and which is combined with a specific aroma, they are particularly useful in all intermittent fevers, and for all disorders in which Artemisia is employed in Europe. Both the extract and the decoction are used. It is particularly serviceable in chronic diseases of horses, which are very fond of this herb. *Martius.*

INULA.

Head many-flowered, heterogamous. Florets of the ray ♀, in 1 row, sometimes by abortion sterile, usually ligulate, sometimes somewhat tubular and trifid; those of the disk ♂, tubular, 5-toothed. Involucre imbricated, in several rows. Receptacle flat, or somewhat convex, naked. Anthers with 2 setæ at the base. Achænium without a beak, tapering or in I. Helenium 4-cornered. Pappus uniform, in 1 row, composed of capillary, roughish setæ. *DC.*

919. I. Helenium *Linn. sp. pl.* 1236. *Eng. Bot.* t. 1546. *Woodv.* t. 108. *Smith Eng. fl.* iii. 440. *DC. prodr.* v. 463. — Corvisartia Helenium *Merat. fl. par. ed.* 2. ii. 261. Aster officinalis *All. pedem.* No. 705. Aster Helenium *Scop. carn.* No. 1078. — Pastures in various parts of Europe. (Elecampane.)

Root thick, branching, aromatic, bitter and mucilaginous. Stem 3 feet high, leafy, round, furrowed, solid; branched, and most downy in the upper part. Leaves large, ovate, serrated, veiny; downy and hoary at the back; radical ones stalked; the rest sessile, clasping the stem. Flower-heads solitary at the downy summits of the branches, 2 inches broad, bright yellow. Scales of the involucre broad, recurved, leafy, finely downy on both sides. Rays very numerous, long and narrow, each terminating in 3 unequal teeth. Achænia quadrangular, smooth. Pappus roughish. Receptacle reticulated, not quite smooth or naked. — Various preparations of the boiled root, mixed with sugar, have been recommended to promote expectoration, and to strengthen the stomach. Some think a spirituous extract contains most of its aromatic and tonic properties. The plant is generally kept in rustic gardens, on account of many traditional virtues. *Smith.* The root contains a white starchy powder called Inuline, a volatile oil, a soft acrid resin, and a bitter extractive. It is regarded as a tonic, diuretic and diaphoretic, and has been used in dyspepsia, pulmonary affections and a variety of other diseases. *Pereira.*

PULICARIA.

Head many-flowered, heterogamous. Florets of the ray ♀, in 1 row, almost always ligulate; of the disk ♂, tubular, 5-toothed. Receptacle naked, tessellated, flattish. Involucre loosely imbricated, in few rows, with linear scales. Achænium not beaked, downy, tapering, not compressed. Pappus in 2 rows; the outer coronet-shaped, toothed, very short; the inner consisting of 10–20 roughish setæ. *DC.*

920. P. dysenterica *Gærtn. carp.* ii. 462. *DC. prodr.* v. 479. — Inula dysenterica *Linn. sp. pl.* 1237. *Eng. Bot.* t. 1115. *Smith Eng. Fl.* iii. 440. — Common in ditches and by roadsides all over Europe. (Common Fleabane.)

Root creeping. Herb more or less woolly or cottony, glutinous, with a peculiar acid aromatic scent, somewhat like the flavour of

peaches. Stem 12 or 18 inches high, round, branched, leafy, cottony, corymbose at the summit, with many bright yellow flower-heads, whose disk is of rather a deeper hue than their numerous narrow spreading rays. Leaves spreading, acute, veiny and wrinkled, slightly toothed or serrated, 1 or 2 inches long, sessile, clasping the stem with their heart-shaped, or arrow-shaped, base; the under side cottony. Involucral-scales numerous, very narrow and acute, woolly. Fruits bristly, obovate. Pappus rough. Receptacle slightly cellular, unequally toothed, or scaly. — Linnæus states, on the authority of General Keith (*Flora Suecica*, ed. ii. 294.), that this cured the Russian army of the dysentery. But Haller speaks contemptuously of the medical virtues of the plant, because, as he says, it abounds in earthy matter. *Smith.*

BIDENS.

Head many-flowered; either homogamous and discoidal, or more frequently both the one and the other in the same species. Florets of the ray ligulate and neuter. Involucral scales in 2 rows, which are alike or unlike. Receptacle flattish, paleaceous. Branches of style terminated by a short cone. Achænium more or less obcompressed, aculeate, terminated by a beak scarcely distinguishable from the achænium, and ending in from 2 to 5 awns, which are rigid and rough backwards.

921. B. tripartita *Linn. sp. pl.* 1165. *Eng. Bot.* t. 1113. *Smith Eng. Flora* iii. 398. *DC. prodr.* v. 594. — B. radiata *Thuill. fl. par.* ed. 2. 422. — Ditches and wet places throughout Europe, the Caucasus, Dahuria and Siberia. (Bur Marigold.)

Root tapering, with many fibres. Stem 2 or 3 feet high, erect, angular, solid, smooth, leafy, with opposite axillary branches. Leaves opposite, on winged footstalks, dark-green, smooth, strongly serrated, acute, in 3 deep segments, sometimes 5; the uppermost or lowermost generally undivided. Flower-heads terminal, solitary, of a brownish-yellow, somewhat drooping, devoid of beauty and of fragrance, each surrounded by about 8 spreading, lanceolate, serrated or entire bracteas, unequal in size, but all extending much beyond the flower-head. Achænia with 2 or 3 prickly angles, and as many erect bristles, likewise prickly with reflexed hooks, by which the achænia stick like burs to any rough surface, and are said sometimes to injure fish, by getting into their gills. *Smith.* — The whole plant is acrid and when chewed excites salivation powerfully.

922. B. chrysanthemoides *Michx. fl. bor. amer.* ii. 136. *Hooker fl. bor. am.* i. 314. *DC. prodr.* v. 595. — Coreopsis Bidens *Walt. fl. car.* 215. — Rice grounds and swamps of Carolina.

A smooth, erect annual. Leaves oblong, tapering to each end, toothed, subserrate, connate at base. Head cernuous, radiant. Outer involucral scales oblong, stiffly ciliated, spreading; inner oval, membranous at the margin. Rays elliptical, twice as long as the involucre. Achænia scabrous backwards, 2-awned, *DC.* — Has the same properties as the last.

SPILANTHES.

Head many-flowered; either heterogamous, with the florets of the ray ligulate, ♀, usually small; or homogamous with all the florets ♂, tubular, 4–5-toothed. Involucre in 2 rows, appressed, shorter than the disk; the outer scales somewhat leafy; the inner rather membranous and folded up. Branches of the style in the ♂ truncate and pencilled at the apex. Anthers blackish. Achænia of the disk compressed, not beaked, usually ciliated at the sides or not aristate; of the ray, when there is any, triquetrous or obcompressed. *DC.*

923. S. oleracea *Jacq. hort. vind.* ii. t. 135. *DC. prodr.* v. 624. — Bidens fervida *Lam. dict.* i. 415. — Parà and other parts of South America.

Stem branched, diffuse. Leaves opposite, stalked, broadly ovate, obtuse at the base, truncate or somewhat cordate, repand-toothed. Pedicels 1-headed, longer than the leaf. Heads thick, ovate, discoidal. Involucral scales 15–16, oval-oblong. Achænia ciliated at the angles biaristate, or awnless. — The whole plant, but especially the involucre and receptacle, act as a powerful stimulant of the salivary organs.

CALEA.

Head many-flowered, either homogamous or radiant. Ray ♀. Involucre ovate, or occasionally campanulate; scales imbricated, usually obtuse and dry. Receptacle more or less conical, paleaceous. Branches of the style in the ♂ without appendages. Achænium taper, compressed, or angular. Pappus of 5–20 paleæ, usually of about 10, linear-lanceolate, scarious, acuminate, 1-nerved, nearly equal. *DC.*

924. C. jamaicensis *Linn. sp.* 1179. *Swartz. fl. ind. occ.* 1327. *DC. prodr.* v. 672. — (*Sloane* i. 257. t. 151. f. 3.) — West India Islands. (Halbert weed.)

A shrub, with round, lax, downy branches. Leaves stalked, ovate, acuminate, subserrated, 3-nerved, scabrous on the upper side, hairy on the under. Heads pedicellate, about 3 at the end of the branches, ovate, discoidal. Involucral scales ovate, hairy externally; paleæ lanceolate. Paleæ of the pappus serrated. *DC.* — The leaves contain a powerful bitter, and, steeped in wine or brandy, form a stomachic medicine in the West Indies. *Linnæa* ix. 512. It is, however, not certain that this account does not rather apply to *Neurolæna lobata*, RBr., the *Caleya lobata* Swartz.

ANTHEMIS.

Head many-flowered, heterogamous. Florets of the ray in 1 row, ligulate, ♀, (rarely 0, or somewhat tubular); of the disk ♂, tubular, 5-toothed. Receptacle convex, oblong or conical; covered with membranous paleæ between the flowers. Involucre imbri-

cated, in a few rows. Arms of the style without appendages at the apex. Achænium tapering or obtusely 4-cornered, striated or smooth. Pappus either wanting, or a very short entire or halved membrane, sometimes auriculate at the inside. *DC.*

925. A. nobilis *Linn. sp. pl.* 1260. *Eng. Bot.* t. 980. *Woodv.* t. 103. *Smith Eng. Fl.* iii. 456. *DC. prodr.* vi. 6. — A. odorata *Lam. fl. fr.* ii. 163. Chamæmelum nobile *All. ped. n.* 673. — Meadows, commons and fields in many parts of Europe. (Chamomile.)

Roots strong, with long fibres. Stems in a wild state prostrate, in gardens more upright, a span long, branched, leafy, hollow, round, furrowed, downy. Leaves doubly pinnate, with narrow linear segments, not truly thread-shaped or cylindrical, but rather flat or channelled above, convex beneath; all acute, often bristle-pointed, a little hairy. Flower-heads terminal, solitary, rather larger than a daisy, with a convex yellow disk, and numerous white, spreading or reflexed, rays. The scales of the receptacle do not appear till the florets of the disk are turned to one side, and the innermost are gradually narrowest; all thin and membranous, not sharp. Involucre with shining membranous-bordered scales, rather downy. Receptacle obtusely conical. Achænia very obscurely bordered at the summit. *Smith.* — Chamomile heads, in the shops called flowers, contain a volatile oil, resin, and bitter extractive. The oil and resin render them stimulant, while the bitter extractive communicates tonic properties. The warm infusion is used externally as a fomentation and internally to promote vomiting. The cold infusion or the extract is taken as a tonic in any cases in which tonic substances are indicated, as dyspepsia. *Pereira.* Chamomile, in substance, has in some instances proved useful in the treatment of intermittents. Dr. Schall affirms that it is not only an effectual preventative of nightmare, but the sole certain remedy for that complaint. *Burnett.*

MARUTA.

Heads many-flowered, heterogamous. Florets of the ray ligulate, neuter, without any trace of sex; of the disk 5-toothed, ♂. Receptacle conical or convex, all or in part covered with paleæ between the flowers. Involucre hemispherical, shorter than the disk, in a few rows. Tube of corolla flat, obcompressed, 2-winged, without appendage at the base; that of the ray continuous with the sterile ovary, and with an oblong ray. Style of the disk with branches destitute of appendages. Achænium costate, smooth, bald, with a small epigynous disk, and a terminal areola. *DC.*

926. M. Cotula *DC. prodr.* vi.13. — Anthemis Cotula *Linn. sp. pl.* 1261. *Eng. Bot.* t. 1772. *Fl. Lond.* t. 61. *Smith Eng. Fl.* iii. 458. A. fœtida *Lam. fl. fr.* ii. 164. Chamæmelum Cotula *All. pedem.* No. 676. Maruta vulgaris *Bluff and Fingerh fl. germ.* ii. 392. M. fœtida *Cass. dict.* xxix. t. 174. — Fields and waste places all over Europe; also Persia, the Crimea, Barbary,

Madeira, the Canaries, and the United States, where it has probably been introduced. (Stinking May weed.)

Root tapering, twisted. Stems 1 or more, erect, branched, bushy, leafy, angular and furrowed, smooth, solid. Leaves sessile, bright green, smooth, or slightly hairy, doubly pinnatifid, and cut; the segments narrow, flat, a little succulent, spreading and rather distant, not crowded or parallel, somewhat bristle-pointed. Flower-heads solitary, on terminal, striated, slightly downy, stalks. Involucre more or less hairy, its scales almost equal, obtuse, slightly bordered. Disk convex, lemon-coloured, the slender bristle-shaped, or awl-shaped, greenish scales not quite so tall as the opening florets. Rays white, elliptical, 3-toothed, deflexed close to the stalk at night. Seeds obovate, furrowed, entirely without any border or crown, but sometimes, as Haller describes them, rough with minute tubercles. Receptacle highly conical, almost cylindrical, beset with slender permanent scales. *Smith.* — Every part of the plant is fœtid and acrid, blistering the skin when much handled. Its decoction is a strong and active bitter, in the dose of a tea-cupfull producing copious vomiting and sweating. *Barton.*

ANACYCLUS.

Head many-flowered, heterogamous. Florets of the ray ♀, sterile, ligulate or somewhat so, very rarely tubular; of the disk ♂, with 5 callous teeth. Receptacle conical or convex, paleaceous. Involucre in few rows, somewhat campanulate, shorter than the disk. All the corollas with an obcompressed, 2-winged, exappendiculate tube. Style of the disk with exappendiculate branches. Achænium flat, obcompressed, bordered with broad entire wings. Pappus short, irregular, toothletted, somewhat continuous with the wings, on the inner side. *DC.*

927. A. Pyrethrum *DC. fl. fr. suppl.* 480 *prodr.* vi. 15. — Anthemis Pyrethrum *Linn. sp. pl.* 1262. *Desf. fl. atl.* ii. 287. *Lam. illustr.* t. 683. f. 4. Chamæmelum specioso flore, radice fervente *Shaw afr. spec. n.* 138. — Barbary, Arabia, Syria, and probably Candia. (Pellitory of Spain.)

Stems numerous, procumbent, somewhat branched, downy. Radical leaves spreading, stalked, smoothish, pinnatifid; the segments pinnated, with linear subulate lobes; cauline leaves sessile. Branches 1-headed. Involucral scales lanceolate, acuminate, brown at the edge. Receptacle convex, with oblong-obovate, obtuse paleæ. Florets of the ray white. — Root fusiform, fleshy, very pungent, and when fresh producing a sensation of extreme cold followed by heat, when handled. *Desf.* The root is imported from the Levant under the name of Pellitory of Spain. It is brownish externally, whitish internally: its taste is hot, acrid and permanent, depending on a fixed acrid oil deposited in vesicles in the bark; this oil renders the root a powerful rubefacient and stimulant. It is principally employed as a masticatory in rheumatic affections of the face, or in the form of tincture in toothach. Sometimes gargles are made of it, and used in relaxation of the uvula. Internally it has been taken as a gastric stimulant. *Perceira.*

PTARMICA.

Involucre campanulate, with the scales brown and scarious at the edge. Receptacle flat, or scarcely convex, broad, paleaceous. Ligulæ 5–20, flat, expanded, much longer than the involucre. Achænia bald, obcompressed; the outer often somewhat winged at the edge. *DC.*

928. P. vulgaris *Blackw. herb.* t. 256. *DC. prodr.* vi. 23. — Achillea Ptarmica *Linn. sp. pl.* 1266. *Eng. Bot.* t. 757. *Fl. Lond.* t. 60. *Smith Eng. Fl.* iii. 460. — Hedges and thickets in moist places in Europe, Siberia, and North America. (Sneezewort.)

Root creeping widely, difficult of extirpation where the soil is moist. Stems upright, about 2 feet high, angular, smooth, hollow, leafy, with small axillary rudiments of branches; corymbose at the top. Leaves sessile, linear, or slightly lanceolate, acute, closely very minutely and sharply serrated, with bristly teeth; smooth on both sides, of a dark somewhat glaucous green. Flower-heads milk-white in the disk as well as the radius, larger than in most of the genus, and with a greater number of ligulate florets. A double variety, whose disk consists entirely of such, is frequent in country gardens. Involucre rather hemispherical. Achænia compressed, dilated at the edges, but not crowned at the top. — The whole plant is pungent, provoking a flow of saliva. Its dried leaves produce sneezing, but this is thought to be owing to their little sharp marginal teeth. *Smith.*

SANTOLINA.

Heads many-flowered; either homogamous or heterogamous. Florets of the ray few, somewhat ligulate, by abortion ♀. Receptacle convex, somewhat hemispherical, covered with oblong somewhat embracing paleæ. Involucre usually campanulate, with imbricated close-pressed scales. Tube of the corolla usually extended into a ring or hood surrounding the apex of the ovary. Achænium oblong, quadrangular, quite smooth, and bald. *DC.*

929. S. fragrantissima *Forsk. descr.* 147. *Vahl. symb.* i. 70. *Del. fl. ægypt.* 119. t. 42. f. 3. — Egypt, Palestine, and between Bagdad and Aleppo.

A small spreading shrub about a foot high, with the habit of Ruta fruticulosa; the branches tomentose and corymbose at the ends. Leaves ovate or oblong, with callous serratures, sessile, somewhat cordate, dotted; the young ones shaggy. Corymbs many-headed. Involucre ovate, downy, white. Florets yellow. Paleæ tomentose at the apex. Tube of the corolla slender, not drawn down over the neck of the ovary. — The flower-heads are extremely fragrant when dry, and are sold in the shops of Cairo as a substitute for Chamomile, under the name of *Babouny* or *Zeysoum*. Forskahl says the fresh juice of the plant is applied in affections of the eyes (oculis dolentibus).

PYRETHRUM.

Head many-flowered, heterogamous. Florets of the ray in 1 row, ♀, ligulate, very rarely wanting; of the disk tubular, ♂, 5-toothed; the tube usually obcompressed and 2-winged, rarely nearly round. Involucre imbricated, campanulate, with the scales scarious at the edge. Receptacle flat or convex, naked, or occasionally bracteolate when the heads are flat. Style of the disk with exappendiculate branches. Achænia wingless, angular, uniform, crowned by a coronetted pappus, which is usually toothed, occasionally auriculate and as broad as the achænium. *DC.*

930. P. Parthenium *Smith Fl. Brit.* 900. *Eng. Bot.* t. 1231. *DC. prodr.* vi. 58. — Matricaria Parthenium *Linn. sp. pl.* 1255. *Woodv.* t. 249. M. odorata *Lam. fl. fr.* ii. 135. — Common in waste places in many parts of Europe. (Feverfew.)

Root tapering. Stem erect, branched, leafy, round, furrowed, many-flowered, about 2 feet high, or more, Leaves stalked, of a hoary green, once or twice pinnate, or pinnatifid; the leaflets, or segments, inclining to ovate, decurrent, cut. Panicle corymbose, sometimes compound; the peduncles long, naked, single-flowered, swelling upwards. Flower-heads erect, about ½ an inch broad, with a convex yellow disk, and numerous short, broad, abrupt, 2-ribbed, white rays; often wanting; sometimes multiplied, and, the disk being obliterated, constituting a double flower. The achænia are crowned with a short membrane. — The whole plant is bitter and strong-scented, reckoned tonic, stimulating, and anti-hysteric. *Smith.* It was once a popular remedy in ague. Its odour is said to be peculiarly disagreeable to bees, and that these insects may be easily kept at a distance by carrying a handful of the flower-heads. *Burnett.*

ARTEMISIA.

Heads discoidal, homogamous or heterogamous. Florets of the ray in 1 row, usually ♀ and 3-toothed, with a long bifid protruding style; of the disk 5-toothed, ♂, or by the abortion of the ovary, neuter or ♂. Involucral scales imbricated, dry, scarious at the edge. Receptacle without paleæ, flattish or convex, naked or fringed with hairs. Achænia obovate, bald, with a minute epigynous disk. *DC.*

*** The species of this genus are generally bitter aromatic plants and many of them have been used medicinally besides the following: — 931, A. Judaica *Linn.*; 932, A. maritima *Linn.*; 933, A. procera *Willd.*; 934, A campestris *Linn.*; 935, A. arborescens *Linn.*; 936, A. glacialis *Linn.*; 937, A. spicata *Jacq.*; 938, A. vallesiaca *All.*; and 939, A. rupestris *Linn.* have been particularly spoken of.

940. A. indica *Willd.* iii. 1846. *Bess. abr. n.* 34. *Roxb. fl. ind.* iii. 419. *DC. prodr.* vi. 114. — Nepal, China, Japan.

Stems several, shrubby, erect, sometimes biennial, branched, striated, the tender parts villous; from 4 to 8 feet high. Leaves alternate, the

lower pinnatifid, the upper trifid, pretty smooth above, a little downy underneath, but not woolly and white; lobes lanceolate, somewhat incised, though generally entire. Floral leaves entire, and linear-lanceolate. Panicles terminal, with the ramifications and flower heads all drooping. Flower heads small, roundish, numerous. Hermaphrodite florets about 10 in the centre, 5-cleft, with the stamens concealed in the gibbous tube. Female ones about the same number in the circumference, obliquely truncated, and so small as to be with difficulty distinguished from the style. Receptacle naked, convex. — Leaves slightly aromatic and bitter. It is considered in India a powerful deobstruent and antispasmodic.

941. A. Dracunculus *Linn. sp. pl.* 1189. *Bess. drac. n.* 22. *DC. prodr.* vi. 97. — Dracunculus hortensis *Blackw. herb.* t. 116. — All the north of Russia in Asia. (Tarragon.)

A smooth, green, perennial herbaceous plant. Stems erect, branched. Radical leaves trifid at the points; the cauline lanceolate, or linear-lanceolate, rather toothed or entire. Panicle spreading, Heads racemose, panicled, globose, rather spreading. Outer involucral scales oblong, scarious at the margin; inner broadly elliptical, scarious at the edge. *DC.* — Leaves and young shoots agreeably pungent and stimulating, usually employed as a pickle, or for giving a pleasant flavour to vinegar.

942. A. Sieberi *Bess. suppl.* p. 80. *DC. prodr.* vi. 101. — A. glomerata *Sieb. in Spreng. syst.* iii. 489. not of *Ledebour.* — Palestine.

Leaves rigid, smooth; the cauline half-amplexicaul, 3–5-parted, the middle lobe pinnatifid, the lateral and their segments trifid and linear. Panicles much spreading, with ascending branches. Heads few-flowered, in scattered spiked panicles, ellipsoidal and tuberculated. *DC.*—According to Batka this produces the substance called *Semen-contra*, *Semencine*, or *Barbotine*, a strong aromatic bitter drug imported from Aleppo and Barbary as a vermifuge. It is employed in powder, in aqueous infusion or in syrup. Its most active principle is obtained by distillation in the form of a yellow volatile oil, which is lighter than water, and has a strong penetrating odour.

943. A. Abrotanum *Linn. sp.* 1185. *Bess. abr. n.* 14. *DC. prodr.* vi. 108. — (*Blackw. herb.* t. 555.) — Hills of the South of Europe. (Southernwood.)

An erect shrub. The lower leaves bipinnate, the upper simply pinnate; their lobes and the floral leaves long and capillary. Heads in virgate panicles, hemispherical, nodding. Involucral scales whitish, hoary, ovate-lanceolate. Corollas naked. — A powerful anthelmintic.

944. A. Moxa *DC. prodr.* vi. 121. — Absinthium Moxa *Besser. abr. n.* 3. — China. (Moxaweed.)

A hoary, branched, compact shrub, about 2 feet high. Leaves hoary, becoming naked, bipinnated, with linear-lanceolate obtuse segments. Heads middle sized, globose, cernuous in panicled racemes. Involucral scales membranous, and scarious at the end. Corollas smooth. *DC.* — It is from the woolly leaves of this, and not A. Chinensis, that the

Chinese prepare their *Moxa*. This substance, employed as a convenient means of applying the actual cautery, is, however, obtained from many other plants.

945. A. Absinthium *Linn. sp. pl.* 1188. *Eng. Bot.* t. 1230. *Woodv.* t. 120. *Smith Eng. Fl.* iii. 408. *DC. prodr.* vi. 125. — Absinthium vulgare *Lam. fl. fr.* 45. — Europe in various parts, the Crimea, Siberia, Barbary, and Newfoundland. (Wormwood.)

Root woody, branched at the crown, with numerous fibres below. Whole herb covered with close silky hoariness, intensely bitter, to a proverb, with a peculiar, strong, aromatic, not disagreeable odour. Stems numerous, bushy, about a foot high, furrowed, leafy. Leaves alternate, doubly pinnatifid, with broadish, blunted, entire segments, rather greener on the upper side; lower ones on long footstalks; upper on shorter, broader, somewhat winged ones. Flower heads on aggregate leafy clusters, stalked, drooping, hemispherical, of numerous, pale-yellow, or buff, florets. Styles very deeply cloven. Receptacle convex, clothed with fine upright hairs. — Common Wormwood is a powerful bitter, much extolled as a stomachic, and recommended by Haller for keeping off fits of the gout, for which it is said to have served the Emperor Charles V. The plant is thought to drive away insects from clothes and furniture, for which purpose it is often laid into drawers and chests in the country. The vegetable alkali of the shops has been usually obtained from this herb, and called Salt of Wormwood, though retaining none of its peculiar qualities. *Smith.* A very bitter alkali called Absinthium has, however, been obtained from it. Wormwood possesses both tonic and bitter properties and has been employed with advantage in intermittent dyspepsia, epilepsy and worms. *Pereira.* Brewers are said to add the fruit to their hops to render beer more heady; rectifiers to their spirits.

TANACETUM.

Heads either homogamous or heterogamous; namely florets of the ray ♀, in 1 row, usually 3–4-toothed. Receptacle naked, convex. Involucre campanulate, imbricated. Corollas of the disk 4–5-toothed. Achænium sessile, angular, smooth, with a large epigynous disk. Pappus either 0, or membranous, coronet-shaped, minute; either entire or equally toothed, or unequal, being more evident on one side than the other. *DC.*

946. T. vulgare *Linn. sp. pl.* 1184. *Eng. Bot.* t. 1229. *Woodv.* t. 115. *Smith Eng. Fl.* iii. 405. *DC. prodr.* vi. 128. Roadsides all over Europe and the Crimea. (Tansy.)

Root moderately creeping. Stems 1½ or 2 feet high, erect, rather angular, leafy, solid, unbranched, smooth. Leaves doubly and deeply pinnatifid, and sharply cut, dark green, smooth. Flower-heads numerous, of a golden yellow, terminal, densely corymbose, the marginal florets scarcely apparent, and often wanting. Achænia with a quadrangular entire crown. — Every part is very bitter, with a strong, but not unpleasant, scent. The qualities are esteemed of a tonic and cordial nature, expelling intestinal worms, and strengthening the digestive

powers. The plant however does not agree with every stomach. *Smith.* Withering says that if meat is rubbed with Tansy leaves, the flesh-fly will not touch it.

EMILIA.

Head many-flowered, homogamous. Florets tubular, 5-lobed: the lobes long and linear. Receptacle flat, scarcely honeycombed. Involucre ovate-cylindrical, in 1 row, with a calyculus; the scales linear, reflexed after flowering. Branches of the style terminated by a short hispid cone. Achænia oblong, pentagonal, with ciliated hispid angles. Pappus in several rows, consisting of filiform hardly feathery setæ. *DC.*

947. E. sonchifolia *DC. prodr.* vi. 302. — Cacalia sonchifolia *Linn. sp. pl.* 1169. Crassocephalum sonchifolium *Less. syn.* 395. Emilia purpurea *Cass. dict.* xxxiv. 393. (*Rheede* x. t. 68. *Rumph.* v. t. 103. f. 1.) — East Indies, China, Isle of France.

An annual plant sparingly pubescent or smooth and somewhat glaucous, erect or spreading. Lower leaves lyrate or obovate, toothed, tapering to the base; the cauline sagittate or cordate amplexicaul, with either obtuse or acute auricles, and either smooth or downy. Corymbs few-headed. Heads on long stalks, purple or orange purple. Florets 30–50, the exterior erect. — The decoction of the leaves is used in India as a febrifuge.

ARNICA.

Head many-flowered, heterogamous. Florets of the ray in 1 row, ♀, ligulate; of the disk ♂, tubular, 5-toothed. Involucre campanulate, in 2 rows, with linear-lanceolate equal scales. Receptacle fringed, hairy. Tube of the corolla shaggy; sometimes some rudiments of sterile stamens remaining in the ligulæ. Style of the disk with long arms, covered by down running a long way down, and truncated or terminated by a short cone. Achænium somewhat cylindrical, tapering to each end, somewhat ribbed and hairy. Pappus in 1 row, composed of close, rigid, rough hairs. *DC.*

948. A. montana *Linn. sp.* 1245. *Fl. dan.* t. 63. *Schkuhr. handb.* t. 248. *DC. prodr.* vi. 317. — Doronicum montanum *Lam. dict.* ii. 312. (*Clus. hist.* iv. 18. f. 1.) — Meadows of the cooler parts of Europe from the sea coast to the limits of eternal snow. (Mountain Tobacco.)

A perennial rather hairy plant. Leaves entire, opposite; the radical obovate or oblong, 5-nerved; the cauline in 1 or 2 pairs. Stem 1–3-headed. Heads erect or drooping. Involucres rough with glands. — A virulent plant, as is asserted, acting as a powerful narcotico-acrid agent; it is said to owe its noxious qualities to the presence of Cytisine. The activity of Arnica seems, however, to have been exaggerated. It has been recommended in the cure of putrid fever, ague, palsy, amaurosis, &c. &c.; and on the Continent has obtained the name of *Panacea lapsorum.*

949. Doronicum Pardalianches *Linn.* is reported to be a poisonous plant.

CALENDULA.

Heads many-flowered. Florets of the ray ligulate, ♀; of the disk tubular and ♂; the corolla of all hispid at the base. Involucre in few rows, with distinct scales. Receptacle naked, flat. Anthers caudate, subulate, short. Style ending in a knotty hispid cone, bifid at the point; of the ray short, with 2 long slender stigmas, smooth below, glandular above. Ovary arcuate, fertile. Achænia produced by the ligulate florets, all without pappus, usually arranged in 2 or 3 rows; the outer more or less rostrate; the intermediate truncate at the apex, prickly at the back, more or less curved, with their sides extended into an entire concave or flat incised membrane; the innermost annular or incurved, muricated at the back, all (especially the innermost) fertile. *DC.*

950. C. officinalis *Linn. sp. pl.* 1304. *Bot. Mag.* t. 3204. *DC. prodr.* vi. 451. — Fields in the South of Europe.

Root annual, fibrous. Stem about a foot high, with many patent, dichotomous, or sometimes trichotomous branches, striated, green, succulent, hispido-pubescent. Leaves oblong, acute, somewhat succulent, broad, and a little cordate at the base, the margins quite entire, often, as well as here and there upon the surface, hispid with short hairs. Flower-heads large, terminal, solitary upon each branch, of a rich, full golden yellow, deeper and brighter previous to their full expansion. Involucre of many nearly equal, appressed, linear-subulate, pilose-hispid leaves or scales, not $\frac{1}{3}$ so long as the radiant florets, the apices a little recurved. Corollas of the ray ligulate, female tridentate, broadly linear, the lower tubular portion hairy. Ovary singularly boat-shaped, curved like a horse-shoe, large, green, downy within, having a thickened margin, more or less tuberculated on the back. Florets of the centre all tubular, small, male, and consequently sterile; the mouth 5-cleft, base hairy. Abortive ovaries cylindrical, downy, green. Receptacle dotted. The heads of fruit have a singular appearance: the centre or disk is occupied by the closely packed, abortive pistils, and is surrounded by the numerous, large achænia, which constitute the circumference, and are cymbiform, with a broad, thickened margin, singularly incurved, within at the base having an elevated lamella, the back furnished with a tuberculated ridge; the inner of these achænia are more narrow, and have less margin. *Hooker.* — It was formerly much employed as a carminative; it is chiefly used now to adulterate saffron.

CYNARACEÆ.

Nat. syst. ed. 2. p. 251.

CENTAUREA.

Scales of involucre various. Florets of the ray almost always enlarged and sterile, more seldom either not longer than the disk, or ♂. Achænium compressed, with a lateral hilum in front. Pappus consisting of rather filiform scabrous setæ, usually in many rows, the inner row generally being smaller and converging, seldom as long as or longer than the rest. *DC.*

951. C. Calcitrapa *Linn. sp. pl.* 1297. *Eng. Bot.* t. 125. *DC. prodr.* vi. 597. — Way sides all over Europe, especially in the South, in the Crimea, Candia, Egypt, Madeira.

Stem between erect and diffuse, very much branched, hairy. Leaves sessile, pinnatifid; the lobes linear, acute, toothed. Heads ovate, nearly sessile among the upper undivided leaves. Involucral scales extended into a long, strong, spreading spine which is channelled above, and has 2 or 3 little spines on each side at the base; the innermost scarious and obtuse at the apex. Pappus 0, *DC.* — Has been used as a febrifuge, and has even been preferred to gentian.

952. C. Centaurium *Linn.*; 953. C. Behen *Linn.*; and 954. C. Jacea *Linn.* have all similar properties, especially the first.

955. Kentrophyllum lanatum *DC.* has been called *Blessed thistle* on account of its supposed febrifugal powers.

SILYBUM.

Heads homogamous, many-flowered and equal-flowered. Involucre ovate; the scales leafy, the exterior dilated into an ovate, long, spiny-pointed appendage, spiny-toothed in the rounded part; the inner ones lanceolate and entire. Receptacle fleshy, fringed. Florets unequally 5-cleft, ringent, with the limb twice as short as the tube. Stamens with monadelphous papillose filaments; anthers with short appendages. Fruit compressed, smooth, with a broad central areola at the base, and a terminal one bearing a horny pappose ring. Pappus in many rows; the setæ shortly bearded. *DC.*

956. S. Marianum *Gærtn. carp.* ii. 378. t. 168. f. 2. *DC. prodr.* vi. 616. — Carduus Marianus *Linn. sp. pl.* 1153. *Eng. Bot.* t. 976. *Smith Eng. Fl.* iii. 386. — Waste places in many parts of Europe; also in the West of Asia, the East Indies, Madeira and Chili. (Milk Thistle.)

Root tap-shaped. Herb very large and spreading, to the exclusion of all other plants, for the most part not hairy nor downy. Stem 4 or 5 feet high, in a manured soil more lofty, branched, round, solid, leafy.

Leaves of a dark shining green, all their veins beautifully bordered with white; their edges spinous. Flower-heads purple, large, solitary at the ends of the branches, erect; the stout spines of their calyx-scales very conspicuous. Achænia large, polished. *Smith.* — The full-grown leaves said to be sudorific and aperient.

LAPPA.

Head homogamous, many-flowered and equal-flowered. Involucre globose; the scales coriaceous, imbricated, close pressed at the base, then subulate, with a horny hooked inflexed point. Receptacle rather fleshy, flat, with stiff subulate fringes. Corollas 5-cleft, regular, with a 10-nerved tube. Stamens with papillose filaments; the anthers terminated by filiform appendages, and with subulate tails at the base. Stigmas few at the apex, diverging, curved outwards. Fruit oblong, laterally compressed, smooth, transversely wrinkled; the areola at their base hardly oblique. Pappus short, in many rows; the hairs deciduous, filiform, rough, not collected into a ring. *DC.*

957. L. minor *DC. fl. fr.* ed. 3. n. 3010. *prodr.* vi. 661. — Arctium Lappa *Eng. Bot.* t. 1228. *Smith Eng. Fl.* iii. 380. — Waste places throughout Europe and the West of Asia. (Burdock.)

Root tapering, fleshy. Stem erect, 3 feet or more in height, solid, leafy, round, furrowed, with many wide-spreading branches. Leaves scattered, stalked, broad, heart-shaped, undulated, veiny; 3-ribbed at the base; somewhat hoary and downy beneath. Flower-heads axillary, either sessile or stalked, generally globose, with little or no woolliness about the calyx. Florets, with their anthers and stigmas, purple. The involucre when in fruit easily breaks from its stalk, and is well known by the name of a Bur, sticking to the coats of animals, and the hair or clothing of young rustics, which can hardly be cleared of such incumbrances without breaking the scales asunder and scattering the fruit. *Smith.*—Root is reckoned tonic, aperient, sudorific, and diuretic. It has been used in the form of decoction in rheumatism and diseases of the skin. Sir Robert Walpole praised it as a gout medicine, and others have considered it an excellent substitute for sarsaparilla. The fruit which is bitter and slightly acrid, has been used as a diuretic.

CNICUS.

Involucre ovate; scales close-pressed, coriaceous, extended into a long hard spiny pinnated appendage; the lateral spines conical and distant. Florets of the ray sterile, slender, as long as those of the disk. Fruit longitudinally and regularly striated, smooth, with a broad lateral scar. Pappus triple as it were; the outer being the horny short, crenated margin of the fruit; the intermediate consisting of 10 long stiff setæ; the inner of 10 short setæ: all the setæ alternating with each other. *DC.*

958. C. benedictus *Linn. sp.* ed. 1. 826. *DC. prodr.* vi. 606. — Centaurea benedicta *Linn. sp. pl.* 1296. Calcitrapa lanugi-

nosa *Lam. fl. fr.* ii. 35. — South of Europe, the Levant, Persia; introduced into Chili.

An annual branched woolly plant. Leaves amplexicaul, somewhat decurrent, nearly entire, pinnated or deeply pinnatifid, more or less hairy. Heads terminal, bracteate. Florets yellow. — Once much used as a febrifuge; although now neglected Mr. Burnett says that its properties are such as to lead to a belief that it has been superseded by other not more efficacious remedies.

CICHORACEÆ.

Nat. syst. ed. 2. *p.* 251.

LACTUCA.

Involucre cylindrical, imbricated, with the scales membranous at the margin, few-flowered. Receptacle naked. Achænium compressed, wingless, with a long filiform beak. Pappus hairlike, in several rows.

959. L. virosa *Linn. sp. pl.* 1119. *Eng. Bot.* t. 1957. *Woodv.* t. 250. *Smith Eng. Fl.* iii. 345. — Hedges, old walls, ruins, and the skirts of fields in Europe.

The root is tap-shaped. Stem solitary, 2 or 3 feet high, erect, round, smooth, sparingly leafy, scarcely branched; panicled at the top; a little prickly below. Leaves horizontal, nearly smooth, finely toothed; radical ones numerous, obovate, undivided, depressed; those of the stem smaller, often lobed; arrow-shaped and clasping at their base; the midrib of all more or less beset underneath with prominent prickles; such as often occur on the margin also. Flower-heads numerous, panicled, with abundance of small, heart-shaped, pointed bracteas. Involucral scales downy at the tip, destitute of any keels or ribs. Corolla small, light yellow. Pappus rough. *Smith.* — The milky juice when inspissated has been used as a substitute for opium.

960. L. sativa *L.*, the common Lettuce, yields a milk which when inspissated resembles opium in appearance, smell, and effects. It has been said to procure calm and sleep, without some of the ill effects of opium. The drug is called officinally Thridace, Lettuce opium, or Lactucarium.

TARAXACUM.

Heads many-flowered. Involucral scales in 2 rows; the innermost linear and parallel, the outer shorter, spreading or reflexed. Receptacle naked, convex, dotted. Achænium round or angular, wingless, with a long beak, which is very slender, brittle, cylindrical, and furnished at the base with toothlike tubercles. Pappus hairlike, very soft, in many rows.

961. T. Dens leonis *Haller hist.* i. 23. *Lessing. synopsis* 135. Leontodon Taraxacum *Linn. sp. pl.* 1122. *Eng. Bot.* t. 510. *Woodv.* t. 3. *Smith Eng. Fl.* iii. 349. — Meadows, pastures, old walls, &c. very common all over Europe. (Dandelion.)

Root tap-shaped, very milky, externally black, difficult of extirpation. Leaves numerous, spreading, of a bright shining green, quite smooth, tapering downwards, sessile, pinnatifid, with sharp, unequally toothed lobes, pointing downwards, or, in botanical language, runcinate, of which these leaves are a perfect example. Scapes 1 or more, longer than the leaves, erect, smooth, brittle, naked. Flower-heads 1½ inch wide, of a uniform golden yellow, expanded in the morning and in fine weather only. Outer scales of the involucre several, linear-oblong, loosely recurved and wavy. As the fruit ripens the involucre becomes reflexed close to the stalk, leaving the light globe, near 2 inches in diameter, formed by their radiating pappus, quite exposed, till dispersed by the winds. *Smith.* — The infusion, decoction, and extract of the root are tonic and in large doses aperient. In some cases it acts as a diuretic. In the hepatic complaints of persons long resident in hot climates it often affords very marked relief.

CICHORIUM.

Involucral scales in 2 rows, the outer shorter and rather lax; the inner 8 or more, converging, equal. Receptacle naked. Achænia beakless, turbinate, all of the same form. Pappus short, equal, composed of elliptical obtuse paleæ, in 2 rows.

962. C. Intybus *Linn. sp. pl.* 1142. *Eng. Bot.* t. 539. *Woodv.* t. 248. *Smith Eng. Fl.* iii. 379. *Lessing synops.* 129. — Common by waysides and on the borders of fields all over Europe. (Wild succory.)

Root spindle-shaped, fleshy, whitish, milky. Stem 2 or 3 feet high, solid, round, furrowed, hispid, very tough. Radical leaves spreading, above a span long, numerous, runcinate, toothed, roughish; cauline smaller, sessile, less lobed, the uppermost cordate, acuminate, entire. Flower-heads large, of a beautiful bright blue, axillary, in pairs, all nearly or quite sessile. Involucre roughish. Anthers and stigma blue. — Root is said to be tonic and in large doses aperient. It has been used in chronic visceral and cutaneous diseases, especially in the form of decoction. *Pereira.* The root is extensively cultivated, especially in France, as a substitute for coffee. When full grown, it is cut into dice, roasted, and ground down, when it cannot be distinguished by the eye from that substance: it agrees with it also in taste, but wants the pleasant aroma. The French maintain that the quality of Coffee is improved by the addition of the succory root if not in too large a quantity. It certainly affords a most harmless means of adulterating it.

VALERIANACEÆ.

Nat. syst. ed. 2. p. 265.

NARDOSTACHYS.

Limb of calyx 5-parted, lobes ovate-oblong, acute, leafy, somewhat toothed, permanent. Corolla regular, ecalcarate, obtusely 5-lobed, bearded in the throat. Stamens 4, attached to the bottom of the corolla. Stigma capitate. Capsule 3-celled, crowned by the lobes of the calyx, and almost shorter than they are, not adnate to a bract. *DC.*

963. N. Jatamansi *DC. coll. mem.* vii. t. 1. *prodr.* iv. 624. *Royle illustr.* 243. t. 54. — Valeriana Jatamansi *Jones in as. res.* ii. 405. iv. 109. *Don in Lamb. cinch.* 180. *ic.* V. Spica *Vahl. enum.* ii. 13. Patrinia Jatamansi *Don prodr. nep.* 159. Ναρδος ινδικη, *Dioscorides.* — On the mountains of the north of India, at considerable heights. (Spikenard.)

A dwarf herbaceous plant with a long hairy tap root. Stems perennial, very short, simply divided into a number of shaggy scaly crowns from which the leaves proceed. Branches erect, a few inches high, downy. Leaves obovate-lanceolate, 3-ribbed, downy; those next the root acute, the upper ones obtuse. Flowers pale pink, clustered in the axils of the upper leaves, which form a kind of involucre to them. — This, the true *spikenard* of the ancients, has been highly esteemed not only as a perfume, but as a stimulant medicine. Oriental writers give it as a remedy for a multitude of diseases, and it appears really to be valuable in hysteria and epilepsy.

VALERIANA.

Limb of the calyx rolled up during flowering, then unrolled into a deciduous feathery pappus, consisting of many plumose setæ. Corolla obconical or cylindrical, equal at the base or gibbous, but without a spur; limb bluntly 5-cleft, rarely 3-fid. Stamens 3. Fruit indehiscent; when ripe 1-celled, 1-seeded.

964. V. officinalis, *Linn. sp.* 45. *Eng. Bot.* t. 698. *Fl. Lond.* t. 5. *Woodv.* t. 96. *Smith Eng. Fl.* i. 43. *DC. prodr.* iv. 641. — Wet places all over Europe, or even in dry pastures. (Common Valerian.)

Root tuberous, somewhat creeping, fetid, most aromatic when growing in dry pastures. Stem about 4 feet high, furrowed. Leaves pinnate; leaflets coarsely serrated, those of the radical leaves broadest, approaching to ovate. Panicles cymose, contracted. Bracteolæ ovate-lanceolate, acuminate, herbaceous, membranous at the edge, appressed, rather longer than the ovary. Calyx superior, rolled inwards in the

form of a rounded thickened rim. Corolla white, funnel-shaped smooth: the tube gibbous at the base on that side of the flower turned away from the axis, hairy internally: limb spreading, divided into 5 nearly equal, concave, linear, rounded lobes. Stamens 3, exserted, white, from the middle of the tube of the corolla. Ovary inferior, narrow-oblong, compressed, 1-celled, with a single pendulous ovule: style filiform: stigma divided into 3 filiform lobes. Fruit light brown, linear-ovate, compressed, with a slightly elevated ridge on one side, terminated by the permanent calyx, whose limb has unrolled into 12 filiform plumose recurved segments, crowning it like pappus. — The aromatic or rather fetid roots are stimulant, not only acting upon the secretions, but producing a specific influence over the cerebro-spinal system, bringing on, as is well known, a kind of intoxication in cats, and in large doses occasioning in man scintillations, agitation, and even convulsions. It is chiefly employed in asthenic fevers, epilepsy, chorea, hysteria, and as an anthelmintic.

965. V. Dioscoridis *Fl. Græc.* i. 24. t. 33. — Φου, *Dioscorides.* — Near Limysus, a river of Lycia.

Root of several, fleshy, fusiform tubers, with an aromatic peppery smell, almost like that of Valeriana officinalis, but less unpleasant. All the herbage smooth. Stem erect, annual, 2 feet high, simple, leafy, taper, hollow. Radical leaves numerous, petiolate, lyrate, pinnated; the leaflets opposite, sessile, ovate, with spreading teeth, and veiny: the odd one very large. Stem leaves few, opposite, sessile, pinnated; the leaflets nearly equal, lanceolate, unequally toothed. Cyme terminal, trichotomous, many-flowered, thyrsoid. Bracts lanceolate, acuminate. Flowers flesh-coloured. Corolla funnel-shaped, not spurred, with a nearly regular limb. Stamens 3, equal. Anthers yellowish. Stigma simple. Fruit keeled on the outside, 3-ribbed on the inside, rather downy, with a radiant feathery pappus. *Smith.* — According to Sibthorp this is the real Phu of Dioscorides, and therefore the most powerful of the Valerians, for which V. officinalis is to be merely considered the northern substitute. De Candolle refers the species to *V. sisymbriifolia* of Desfontaines, an oriental plant; but the synonymy does not appear to be certain, and the former learned Botanist was not personally acquainted with the subject.

966. V. Hardwickii *Wall. in Roxb. Fl. Ind.* i. 166. *As. Research.* vi. 350. *DC. prodr.* iv. 640. — Mountains in the north of India.

Pubescent, erect. Stem striated. Radical leaves numerous, long-stalked, ovate-cordate, acute, unequally sinuated; cauline sessile, remote, pinnatifid. Corymbs becoming long and panicled; pedicels dichotomous. Stamens enclosed. Fruit ovate, downy. *DC.* — The thick, fleshy, strong scented root is used in medicine in Nepal and the North of India. *Royle's lecture*, 82.

PLANTAGINACEÆ.

Nat. syst. ed. 2. *p.* 267.

PLANTAGO.

Flowers spiked or capitate. Calyx 4-leaved. Corolla hypocrateriform, membranous, with a 4-parted spreading limb. Stamens 4, long and flaccid. Style simple; stigma unilateral. Capsule cut round spuriously, 2-celled, few or many-seeded.

967. P. Ispaghula *Fleming in As. research.* xi. 174. *Roxb. fl. ind.* i. 404. — Cultivated in India; probably a native of Persia. *Royle.*

An annual plant. Stem, if any, very short, soon dividing into 3 or 4 ascending, round, villous branches, which are a few inches in length. Leaves alternate, linear-lanceolate, 3-nerved, luxuriant in young plants, remotely denticulate, somewhat woolly, towards the base channelled, and amplexicaul, 6 to 8 inches long, by a $\frac{1}{4}$ or $\frac{1}{2}$ an inch broad. Peduncles axillary, solitary, naked, erect, round, a little villous, the length of the leaves. Spikes solitary, terminal, before the flowers expand ovate, afterwards cylindrical, when in seed about 1 inch or $1\frac{1}{2}$ inch long and erect. Flowers numerous, imbricated, small, dull, white, withering. Bractes 1-flowered, ovate, concave, with the keel green, and the sides membranaceous. Calyx 4-leaved; sepals oblong, ovate, with broad membranaceous margins. Corolla with a gibbous tube, and ovate, acute segments. *Roxb.* — A mucilaginous drink is prepared from the seeds in India, and often prescribed by European practitioners in India, when emollients are wanted. It also forms part of the native Materia medica.

968. P. Psyllium *Linn. sp.* 167. *Willd.* i. 650. *R. and S.* iii. 145. — Southern parts of Europe and Barbary.

An annual. Stems diffuse, villous, much branched. Leaves linear, narrow, ciliated, almost smooth, acute, recurved, very little toothed; the upper often in whorls of 3 or 4. Peduncles slender, filiform, downy, at least as long as the leaves. Spikes small, short, capitate, almost smooth, not leafy, bracteate; the two lower bracts almost the length of the spikes, downy, the other shorter and more dilated. — The seeds are peculiarly mucilaginous, and have been made into demulcent drinks as a good substitute for linseed or marsh mallows. The two following have been employed for the same purpose.

969. P. arenaria *W. and K.*

970. P. Cynops *L.*

971. The common perennial Ribgrass *P. lanceolata* L. has rather bitter astringent leaves and roots, and has been used with some other species as an expectorant and vulnerary, but the properties do not appear to be of any importance.

GLOBULARIACEÆ.

Nat. syst. ed. 2. *p.* 268.

GLOBULARIA.

Flowers capitate, surrounded by an imbricated involucre. Calyx tubular, 5-toothed. Upper lip of the corolla 2-fid, lower 3-parted. Fruit seed-like, enclosed within the calyx. Receptacle coriaceous.

972. G. Alypum *Linn. sp. pl.* 139. *DC. Fl. fr. n.* 2333. *Lam. encycl.* ii. 724. *R. and S.* ii. 38. — (*Garid. Aix* 210. t. 42.) — South of Europe, on the coast of the Mediterranean, on rocks.

Stem 2 feet high, and more, erect, shrubby, branched, brittle. Leaves evergreen, small, myrtle-like, hard, lanceolate, 3-toothed and entire. Corolla pale blue, in terminal heads which are much like those of *Scabiosa succisa*. Calyx covered with white hairs. Corolla 1-lipped, trifid. — A bitter, drastic purgative, once supposed to be the Ἄλυπον of Dioscorides, and hence called *Frutex terribilis*. The Alypum however had the σπέρμα ὡς ἐπιθύμου, and was therefore in all probability some Euphorbia.

973. G. vulgaris *Linn. sp. pl.* 139. *Willd.* i. 540. *Lam. encycl.* ii. 730. *R. and S.* ii. 39. — (*Cam. hort.* 18. t. 7. *Moris. hist.* iii. t. 15. f. 46.) — Hills and dry meadows in the middle of Europe.

Stem herbaceous. Radical leaves spathulate-lanceolate, somewhat emarginate, or 3-toothed, much shorter than the petiole; with the middle rib prolonged into a mucro; cauline lanceolate. Flowers blue, in heads solitary at the point of a simple leafy scape. Two of the stamens longer than the others. — Purgative like the last; and has been employed as a resolvent and vulnerary according to Lemery.

974. G. nudicaulis *L.* has similar properties.

SALVADORACEÆ.

Nat. syst. ed. 2. *p.*269.

SALVADORA.

Calyx small, quadrifid, with ovate rather obtuse segments Corolla quadripartite, with revolute segments. Styles short, with a simple, obtuse, umbilicated stigma. Berry globose, 1-celled, with a spherical seed, enwrapped in a callous tunic.

875. S. persica *Garc. phil. trans.* 1749. n. 491. *Vahl. symb.* i. 12. t. 4. *Lam. illustr.* t. 81. *Roxb. fl. ind.* i. 389. *corom. pl.* i. 26. t. 26. — Rivina paniculata *Linn. syst. veg.* ed. xv. 171. Cissus arborea *Forsk. descr.* 32. — Most parts of the Circars of India; Arabia; Persian Gulf.

Trunk generally crooked, from 8 to 10 feet high to the branches, and 1 in diameter. Bark very scabrous, and deeply cracked. Branches exceedingly numerous, spreading, with their extremities perfectly pendulous, like the weeping willow. Leaves opposite, stalked, oval or oblong, entire, very smooth, and shining on both sides, without veins; from 1 to 2 inches long, and about 1 broad. Stipules none. Panicles terminal, and from the exterior axils. Flowers minute, very numerous, greenish-yellow. Bracts minute. Calyx inferior, 4-toothed, permanent. Corolla monopetalous; tube short; border 4-cleft; segments oblong, revolute. Filaments 4, inserted into the tube of the corolla under its fissures, and rather shorter than the border. Anthers oval. Ovary globular; style none; stigma scabrous. Berry very minute, much smaller than a grain of black pepper, smooth, red, juicy. Seed single. — The fruit has a strong aromatic smell, and tastes like Garden cress. The bark of the root is remarkably acrid; bruised and applied to the skin it soon raises blisters, for which the natives of India often use it. As a stimulant it promises to be a medicine of very considerable power. *Roxb.* It is supposed to be the *Mustard Tree* of Scripture.

PLUMBAGINACEÆ.

Nat. syst. ed. **2.** *p.* 269.

STATICE.

Flowers in panicled spikes. Calyx plaited, scarious. Corolla deeply 5-parted. Stamens inserted into the base of the corolla. Utricle 1-seeded, enclosed in the calyx.

976. S. caroliniana *Walter fl. carol.* 118. *Bigelow med. bot.* ii. t. 25. — Common in the salt marshes of the United States, where it is called "Marsh Rosemary."

Root perennial, large, fleshy, fusiform or branched. Leaves narrow-obovate, on long petioles, smooth, veinless, obtuse, mucronated, level and flat on the margin, in which respect they differ from S. Limonium, which is undulated. Scape round, smooth, slightly scaly, flexuose terminated by a panicle of numerous branches, which bear the flowers on the upper side only. Flowers alternate, erect, mostly in pairs, but appearing singly in consequence of one expanding before the other. Peduncles short, forked, concealed by several sheathing scales. Calyx funnel-shaped, scarious and pink at the edge, 5-angled, the angles ciliate and ending in long acute teeth with sometimes, not always, minute intermediate teeth. Petals spathulate, obtuse, longer than the calyx, pale bluish purple. Stamens inserted in the claws of the petals; anthers heart-shaped. Ovary small, obovate, with 5 ascending styles shorter than the stamens. Fruit oblong, invested with the persistent calyx. — Root a most powerful and intense astringent; chiefly used as a local remedy in aphthæ and similar affections of the mouth and fauces; has been employed with success in Cynanche maligna.

ARMERIA.

Flowers capitate, surrounded by an imbricated involucre, which is prolonged at the base into a tube. Receptacle paleaceous. Otherwise the same as Statice.

977. A. vulgaris *Willd. enum. hort. Berol.* i. 333. *R. and S.* vi. 771.—Statice Armeria *Willd. sp. pl.* ii. 1522. *Schkuhr. bot. handb.* t. 87. S. capitata *Lam. fl. fr.* iii. 63. — Dry sandy places in many parts of Europe, and in Labrador. (Common Thrift.)

Roots thick, black. Scape 1–2 feet high, rarely rather downy. Leaves radical, somewhat coriaceous, 4–5 inches long, ribbed, entire, smooth, 2–3 lines broad, rather acute, tapering at the base into a channelled petiole. Flowers pale red, or white, in heads the size of a cherry. Sepals usually larger than the flowers. The sheath of the involucre reflexed, an inch long. Segments of the involucre more or less mucronate. — Dr. Ebers speaks of the flowers of this plant, vul-

garly called "Pissblume" in Germany, as an active diuretic. From 2 drachms to an ounce of the flowers freshly gathered and quickly dried should be gently boiled and the patient allowed to drink of the decoction *ad libitum*. Some aromatic, as anise or cinnamon, is added to the decoction. The remedy appears to cause the excretion of urine in a direct manner. *Med. gaz.* xx. 144.

N. B. The common Thrift of English Gardens is *A. maritima* Willd.

PLUMBAGO.

Calyx tubular, pentagonal, 5-toothed, covered with stalked glands. Corolla hypocrateriform, with a 5-cleft limb. Stamens hypogynous, dilated at the base. Style simple; stigma 5-cleft. Fruit seed-like, enclosed in the valve-like bases of the filaments, crowned by the conical base of the style.

978. P. europæa *Linn. sp. pl.* 215. *Willd.* i. 837. *Bot. Mag.* t. 1249. *Schkuhr. handb.* t. 36. — South of Europe.

An erect, branching, smooth, herbaceous plant. Stems slender, angular, rather flexuose, with spreading rigid branches. Leaves obovate-lanceolate, sessile, rather scabrous, amplexicaul, slightly toothed at the edge, the uppermost much narrower, and more linear. Flowers in terminal capitate interrupted spikes. Calyx naked at the base, covered with stalked glands towards the upper end. Corolla funnel-shaped, twice as long as the calyx, lilac-coloured, striped. — A very acrid plant. It has been used to remove toothache whence its French name of *Dentelaire*. In decoction it has been recommended as a stimulating wash to old and sluggish ulcers, and as a kind of potential cautery to cancers; but Sauvage de la Croix says that a young woman, who had it applied, affirmed that the pain it occasioned was intolerable, and that she felt as if being flayed alive. Administered internally in small doses it is said to be as effectual an emetic as Ipecacuanha. *Burnett.*

979. P. rosea *Linn. sp. pl.* 215. *Bot. mag.* t. 230. — ? Radix vesicatoria *Rumph.* v. 453. t. 168. (*Rheede* x. 17. t. 9.) — Various parts of the East Indies.

An erect herbaceous plant, with a round striated stem, and ascending or erect branches. Leaves ovate-lanceolate, flat, rather obtuse, or apiculate, stalked, slightly toothletted and ciliated; with the petiole clasping the stem. Flowers distant, in long slender spikes. Calyx closely covered with numerous spreading stalked glands. Corolla hypocrateriform, bright reddish-pink, with a slender tube much longer than the calyx; lobes of the limb oblong, obtuse, flat, apiculate. — This is usually believed to be the Radix vesicatoria of Rumph, which being sliced and applied to the skin produces blisters, but less rapidly and effectually than Cantharides. It however appears to me very doubtful whether the Amboyna plant is the same species as this.

980. P. scandens *L.* from the West Indies; and,

981. P. zeylanica *L.* are said to have similar properties.

CORDIACEÆ.

Nat. syst. ed. 2. *p.* 272.

CORDIA.

Calyx tubular, 4–5-toothed. Corolla funnel-shaped, or campanulate, with a flat 5- or 7-cleft, limb, and a hairy or naked throat. Stamens 5, short, inserted in the throat of the corolla. Style protruding, bifid, with 4 stigmas. Ovary 3–4-celled. Drupe containing 1 stone, with 1–3 cells, 2 of which are usually abortive.

982. C. latifolia *Roxb. fl. ind.* i. 588. — Hindostan.

Branches numerous, spreading, and drooping; young shoots angular and smooth; the general height of trees 10 or 12 years old about 20 feet. Leaves alternate, petioled, round, cordate, and ovate, often slightly repand, 3-nerved, of a hard texture, smooth above, scabrous and pale underneath, from 3 to 7, or even 8 inches long, and rather less in breadth. Petioles nearly round, and smooth. Panicles short, terminal and lateral, roundish, the branches alternate, diverging, and once or more frequently dichotomous. Flowers numerous, small, white. Bracts minute, villous. Calyx villous, campanulate, leathery; mouth unequally toothed. Corolla short, campanulate; segments 5, linear-oblong. Filaments as long as the segments of the corolla, and inserted immediately under their fissures. Anthers incumbent. Ovary ovate, 4-celled, with 1 ovule in each attached to the upper end of the axis. Style short. Stigma 4-cleft; segments long, rugose and recurved. Drupe oblate-spheroidal, about 1 inch or 1¼ inch in diameter, smooth, when ripe straw-coloured, covered with a whitish bloom. Pulp in large quantity, soft, clear, and very clammy. Nut nearly circular, laterally-compressed, rugose on the outside, with a cavity at each end, the lower one deeper than the other, exceedingly hard, 4-celled, though rarely with all the cells fertile. Seed solitary, ovate-oblong. Integument single, white, soft and oily. Plumule very small. Radicle conical, superior. *Roxb.* — Under the name *Sebesten Plums*, *Sebestans*, or *Sepistans*, two sorts of Indian fruit have been employed as pectoral medicines, for which their mucilaginous qualities, combined with some astringency, have recommended them. They are believed to have been the Persea of Dioscorides. According to Mr. Colebrooke this is a larger and more mucilaginous sort than that described by European writers on Materia Medica, which is the produce of the following species.

By an unfortunate error Linnæus has applied the name of Sebesten to an American species of this genus, not known in medicine.

983. C. Myxa *Linn. sp. pl.* 273. *Willd.* i. 1072. *Roxb. fl. ind.* i. 590. — Sebestena officinalis *Gærtn. fruct.* i. 363.

t. 76. (*Rheede* iv. t. 37.)—Many parts of India, Persia, Arabia, Egypt.

Trunk generally crooked, from 8 to 12 feet high, and as thick or thicker than a man's body. Bark grey, cracked in various directions. Branches numerous, spreading, and bent in every possible direction, forming a dense shady head. Leaves scattered, stalked, ovate, oval, or obovate, exterior half slightly scolloped, or toothed, smooth above, below a little scabrous when old; from 2 to 3 inches long, and from $1\frac{1}{2}$ to 2 broad; petioles about $\frac{1}{3}$ the length of the leaves. Panicles terminal, and also lateral, globular, dichotomous. Bracts none. Flowers numerous, small, white; a very large proportion of them are sterile, and they always want the style. Calyx tubular, widening towards the mouth, and there torn as it were into 3, or 5 divisions, smooth, not in the least striated. Corolla with revolute lobes. Style in the fertile flowers as in the genus, in the barren flowers wanting. Drupe globular, smooth, the size of a cherry, sitting in the enlarged calyx, when ripe, yellow, the pulp is almost transparent, very tough and viscid. Nut cordate, at both ends bidentate and perforated, rugose, somewhat 4-sided, 4-celled, but it rarely happens that all the cells prove fertile. Seeds solitary. *Roxb.* — The smell of the nut when cut is heavy, and disagreeable, the taste of the kernels like that of fresh filberts. It is the true Sebesten of the European Materia Medica. The fruits according to Roxburgh, are not used in the Northern Circars of India, for any medicinal purpose. When ripe they are eaten by the natives, and also most greedily, by several sorts of birds, being of a sweetish taste. The wood is soft, and of little use except for fuel. It is reckoned one of the best kinds for kindling fire by friction, and is thought to have furnished the wood from which the Egyptians constructed their mummy-cases. The bark is said by Dr. Royle to be accounted a mild tonic.

BORAGINACEÆ.

Nat. syst. ed. 2. *p.* 274.

BORAGO.

Sepals 5, equal, spreading. Corolla rotate, with 5 flat spreading lobes, with 5 erect appendages or valves (sterile stamens), arising from the throat. Anthers sagittate. Nuts ovate, rugose, converging.

984. B. officinalis *Linn. sp. pl.* 197. *E. Bot.* t. 36. *Smith Eng. Fl.* i. 264. — Common in many places by roadsides, and in waste ground. (Borage.)

Root tapering, mucilaginous, as well as the herbage, which is clothed all over with very pungent bristles. Stem branched 1½ or 2 feet high, round, spreading, leafy. Leaves alternate, ovate, wavy, and more or less toothed; the lower ones broadest, and stalked. Flowers numerous, in terminal drooping bunches, very beautiful. Corolla an inch broad, of a most brilliant blue; pink in the bud. Valves and anthers prominent, blackish. Fruit wrinkled and warty, of a light shining brown. — The whole plant has an odour approaching to Cucumber and Burnet, which gives a flavour to a cool tankard; but its supposed exhilarating qualities, which caused Borage to be reckoned one of the four cordial flowers, along with Alkanet, Roses, and Violets, may justly be doubted. *Smith.* It was once esteemed as a pectoral medicine, and a decoction of its leaves mixed with honey makes a good ptisan.

TRICHODESMA.

Calyx 5-parted. Corolla somewhat rotate; throat naked; segments of the limb subulate at the point. Stamens very much protruding: filaments very short; anthers adhering by 2 rows of dorsal hairs, with subulate twisted aristæ. Stigma nearly simple. Nuts half immersed in the hollows of a 4-winged column, adnate near the point. *RBr.*

985. T. zeylanica *RBr. prodr.* 352. — Borago zeylanica *Linn. mant.* 202. *Jacq. ic. rar.* ii. t. 314. *Burm. ind.* 41. t. 14. f. 2. — Various parts of the East Indies; the tropical part of New Holland.

An annual, with the stem hispid with stiff pellucid bristly hairs; growing from 4 to as much as 8 feet high. Leaves opposite, subsessile, lanceolate, sparingly hispid; those under the flowers alternate, small, cordate-lanceolate. Peduncles nearly solitary, 1-flowered, drooping, longer than the floral leaves, round and hairy. Flowers pale blue. Calyx with 5 elevated ridges proceeding from its recesses, expanding on the fruit. Segments of the corolla broad, cordate with attenuated points.

Fruit smooth externally, rough on the side next the receptacle. — The species of Trichodesma are considered diuretic, and one of the cures for snake bites in India. *Royle.*

SYMPHYTUM.

Calyx 5-parted. Corolla campanulate, with a truncated, cylindrical shallow-toothed limb as long as the tube; its throat closed by 5, lanceolate, fringed, converging valves or appendages (sterile stamens). Anthers sagittate, acute, concealed by the valves.

986. S. officinale *Linn. sp. pl.* 195. *Eng. Bot.* t. 817. *Woodv.* t. 215. *Smith Eng. Fl.* i. 263.—In watery meadows throughout Europe. (Comfrey.)

Root externally black, oblong, fleshy, yielding much pure insipid mucilage, which renders it useful in coughs, and all internal irritation. Stems 3 feet high, hairy, winged with the decurrent bases of the taper-pointed, wavy, rough-edged leaves. Clusters hairy, stalked, in pairs, revolute. Calyx more or less spreading. *Smith.* — Formerly in much repute as a vulnerary, but not now employed.

987. Cynoglossum officinale *L.* was once officinal, being used as an antispasmodic; but it is so fetid that it has long since ceased to be exhibited. Smith says it is narcotic.

*** No plants of this order are of any real importance in medicine.

LAMIACEÆ, OR LABIATÆ.

Nat. syst. ed. 2. p. 275.

*** A great number of different plants of this order have, from time to time, been introduced into medicine, as aromatics and stimulants, or for imaginary virtues. It would be only encumbering the pages of this work to notice anything like all such cases in detail, as the greater part are abandoned in modern practice, and appear to be of little or no consequence, except in the kitchen. It will be sufficient to give a list of those best known, and to describe such only as are most remarkable, or as are still included in the Materia Medica.

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988. Ocymum suave *Willd.* is used in India as a stomachic, and a cure for infantile catarrh.

989. Ocymum crispum *Thunb.*; an infusion of the leaves is said by Thunberg to be used in Japan as a cure for rheumatism.

990. Ocymum cavum *Sims*, is esteemed a sudorific in Brazil.

991. Ocymum Basilicum *Linn.*, according to Ainslie, is used in India to assuage the pains of childbirth; the *pilose* variety is employed.

992. Ocymum viride *Willd.* is employed in Sierra Leone as a febrifuge.

993. Ocymum sanctum *Linn.* is reported by Ainslie to have similar powers in India.

994. Geniosporum prostratum *Benth.*, has been used at Pondicherry as a febrifuge. *Burnett.*

LAVANDULA.

Calyx tubular, nearly equal, 13- or rarely 15-ribbed, shortly 5-toothed, with the 4 lower teeth nearly equal, or the 2 lower narrower; the upper either but little broader than the lateral ones, or expanded into a dilated appendage. Upper lip of corolla 2-lobed, lower 3-lobed; all the divisions nearly equal; the throat somewhat dilated. Stamens didynamous, declinate Filaments smooth, distinct, not toothed. Anthers reniform, 1-celled.

995. L. vera *DC. fl. fr. suppl.* v. 398. *Benth. labiat.* 148. — L. Spica *Linn. sp. pl.* 800. L. angustifolia *Mœnch. meth.* 389. L. officinalis *Vill. fl. dauph.* ii. 355. 363. — On sterile hills in

Europe, and the southern side of the Mediterranean. (Common Lavender.)

A shrub 1–2 feet high. Leaves oblong-linear or lanceolate, entire, when young hoary and revolute at the edges. Spikes interrupted. Whorls of 6–10 flowers. Floral leaves rhomboid-ovate, acuminate, membranous, all fertile, the uppermost shorter than the calyx. Bracts scarcely any. *Benth.* — The spikes of flowers contain a fragrant volatile oil in great abundance, together with a bitter principle. They are carminative, stimulant and tonic, but are more employed in perfumery than in medicine. Leaves and flowers have been used as sternutatories; *oil of lavender* is obtained by distillation, and is sometimes given in hysteria and nervous headach. *Spirit of Lavender* is prepared by distilling lavender flowers with rectified spirit, a sufficient quantity of water being added to prevent empyreuma. Lavender enters into the composition of *Eau de Cologne*, and the *Vinaigre aux quatre voleurs*.

996. L. Spica *DC. fl. fr.* v. 397. *Benth. lab.* 149. — L. Spica *β. Linn. sp. pl.* 800. L. latifolia *Vill. fl. dauph.* ii. 363. — South of Europe, and barren situations on the African side of the Mediterranean. (French Lavender.)

A shrub rather more dwarf than the last, and more hoary. Leaves oblong-lanceolate, somewhat spathulate, entire, much narrowed at the base, somewhat revolute at the edge, hoary on both sides. Spikes somewhat interrupted. Whorls of from 6 to 10 flowers. Floral leaves lanceolate or linear, all fertile, the upper ones shorter than the calyx. Bracts linear-subulate, shorter than the calyx. *Benth.* — This is not employed medicinally, but yields what is called *oil of spike*, which is used by painters on porcelain and in the preparation of varnishes for artists.

997. Lavandula Stœchas *L.* has long been employed medicially by the Arabs, who consider it a valuable expectorant and antispasmodic.

998. Dysophylla Auricularia *Blum.* has been recommended as a stimulating application in the treatment of deafness.

MENTHA.

Calyx campanulate or tubular, 5-toothed, equal or somewhat 2-lipped, with the throat naked inside or villous. Corolla with the tube enclosed, the limb campanulate, nearly equal, 4-cleft: the upper segment broader, nearly entire or emarginate. Stamens 4, equal, erect, distant; filaments smooth, naked; anthers with 2 parallel cells. Style shortly bifid, with the lobes bearing stigmas at the points. Fruit dry, smooth. *Benth.*

999. M. viridis *Linn. sp. pl.* 804. *Sole menth. britt.* t. 5. *Woodv.* t. 170. *Eng. Bot.* t. 2424. *Benth. lab.* 173. — Marshy places in the milder parts of Europe, the Canaries, the Cape of Good Hope, and America, both North and South. (Spear Mint.)

A creeping-rooted herbaceous plant, with an erect smooth stem.

Leaves subsessile, ovate-lanceolate, unequally serrated, smooth; those under the flowers all bract-like, rather longer than the whorls; these last and the calyxes hairy or smooth. Spikes cylindrical, loose. Whorls approximated, or the lowest or all of them distant. *Benth.* — The herb has a strong, peculiar and pleasant odour, with an aromatic bitter taste, followed by a sense of coldness when air is drawn into the mouth. It is an aromatic and carminative, and employed in flatulence and to relieve the pain of colic. Various preparations are ordered by Pharmacopœias, of which *oil of spearmint*, and *spearmint* water are the most common. The former is taken in doses of from 2 to 5 drops, rubbed with sugar, in a little water.

1000. M. piperita *Linn. sp. pl.* 805. *Eng. Bot.* t. 687. *Sole's mints* t. 7. *Smith Eng. Fl.* iii. 76. *Bentham lab.* 175. — M. glabrata *Vahl.* kahirina *Forsk.* balsamea *Willd.* hirta *Willd.* Pimentum *N. ab E.* — In marshes and by the sides of ditches and rivers, all over Europe, in Egypt, the middle of Asia, India, and North and South America. (Peppermint.)

Stem procumbent, ascending, branched, reddish, quite smooth, or fringed with a very few spreading hairs; petioles generally ciliated. Leaves ovate-oblong, or somewhat lanceolate, rounded at the base, deep green, smooth or hairy on the under side. Upper floral leaves small, lanceolate-subulate, shorter than the flowers. Whorls few, lax, the uppermost collected into a short, oblong, obtuse, reddish spike; the lowermost remote, with the cymes shortly stalked. Bracts subulate, the outer ones as long as the calyx. Pedicels quite smooth. Teeth of the calyx hispid, subulate, erect. *Bentham.* — Peppermint is an aromatic stimulant and the most pleasant of all the mints. It is employed in medicine for several purposes, principally to expel flatus, to cover the unpleasant taste of other medicines, and to relieve nausea and griping pains of the alimentary canal. The volatile oil is sometimes taken as an antispasmodic; it is what gives their flavour to peppermint lozenges. *Pereira.*

1001. M. Pulegium *Linn. sp. pl.* 807. *Eng. Bot.* t. 1026. *Woodv.* t. 171. *Sole's mints* t. 23. *Bentham lab.* 182. — M. exigua *Linn.* simplex *Host.* tomentosa *Smith.* tomentella *Hffsgg. and Link.* gibraltarica *Willd.* pulegioides *Rchb.* Pulegium vulgare *Mill. dict.* No. 1. P. tomentellum *Presl. sic.* 36. — Wet ditches and similar places in most parts of Europe; also the Caucasus, Chili, and Teneriffe. (Pennyroyal.)

Stems procumbent or prostrate, very much branched, more or less hairy, rooting. Leaves scarcely ½ an inch long, often much less, stalked, ovate, obtuse, with a few shallow unequal serratures, full of pellucid dots, and a little hairy, chiefly underneath. Whorls sessile, numerous, many-flowered, globose, distant, large in proportion to the foliage. Flowers light purple or nearly white. Calyx hispid, 2-lipped, villous in the inside of the throat. — The properties of this are analogous to those of other mints. The public fancy it to be possessed of specific emmenagogue and antispasmodic qualities; an opinion formerly entertained of it by some medical practitioners. It is principally employed in obstructed menstruation, hysterical complaints, and hooping cough. *Pereira.*

1002. Mentha citrata *Ehr.* furnishes a fragrant oil, having very much the odour of bergamot.

1003. Mentha rotundifolia *Linn.*
1004. Mentha aquatica *Linn.*
1005. Mentha arvensis *Linn.*
} have been in repute as stomachics and emmenagogues.

1006. Leonotis nepetifolia *RBr.* (Phlomis nepetifolia *Linn.*) called *Cordão do Frade* in Brazil, is used in that country, in baths, as a remedy for rheumatic complaints.

LYCOPUS.

Calyx campanulate, equal, 4–5-toothed; with the throat naked inside. Corolla scarcely longer than the calyx, campanulate, equal, 4-cleft. Stamens 2, rather projecting, distant. Anthers 2-celled, with nearly parallel distinct cells.

1006 *a.* L. europæus *Linn. sp. pl.* 30. *Eng. Bot.* t. 1105. *Benth. labiat.* 186. — L. aquaticus *Mœnch.* palustris *Lam.* vulgaris *Pers.* — All over Europe and the north of Asia, in wet places; also Barbary, China, New Holland, and Van Diemen's Land.

Stem from 1 to 3 feet high, not running, acutely quadrangular, smooth or pubescent. Leaves stalked, ovate-oblong, sinuate, toothed or pinnatifid. Whorls many-flowered, very dense. Calyx acutely 5-toothed, with rigid teeth longer than the tube. No rudiments of sterile stamens on the corolla. Achænia rather shorter than the tube of the corolla. — Has had the reputation of being a powerful febrifuge. It has also been commended as an astringent, and used formerly to be administered to restrain internal hæmorrhage. It is known to make a good black dye, and Withering says that gipsies stain their skins with it. *Burnett.*

MERIANDRA.

Calyx ovate, bilabiate; the upper lip concave, entire, or very slightly 3-toothed; the lower bifid, naked internally at the throat. Corolla with a tube as long as the calyx; the limb nearly equal, 4-cleft, with flat lobes, the uppermost of which is entire or emarginate. Stamens generally 2; anthers 2-celled, with distinct, stipitate, equal, pendulous cells, and a short linear connective, articulated in the middle with the filament, and erect on each side. *Bentham.*

1007. M. benghalensis *Benth. in Wall. pl. as. rar.* i. 29. *lab.* 189. — Salvia benghalensis *Roxb. fl. ind.* i. 146. S. dianthera *Roth. n. sp. pl.* 18. — Bengal and Coromandel.

A straggling shrub, with a trunk sometimes as thick as a man's arm. Bark cracked, and peeling off in irregular pieces. Young shoots downy, round. Leaves as in Salvia officinalis. Racemes terminal, often compound, verticillate. Whorls approximated, globular, many-flowered. Flowers white. Calyx gibbous, downy, 3- or 4-toothed. Corolla with

both lips recurved, or spreading. Stamens 2; sometimes 3 or even 4, with their filaments bifid, each division bearing an oval 1-celled anther. — Leaves similar in smell and taste to those of Salvia officinalis, but much stronger: they are applied to the same uses.

SALVIA.

Calyx tubular or campanulate, 2-lipped. Corolla bilabiate, the upper lip usually arched. Stamens 2; anthers halved, with a flat dilated connective, which is placed vertically with the anther upon the upper end.

1008. S. officinalis *Linn. sp. pl.* 34. *Woodv.* t. 38. *Benth. lab.* 209. — Various parts of the south of Europe. (Garden Sage.)

A low straggling shrub. Branches erect, hoary with down, leafy at the base, those bearing flowers 1 foot or 1½ foot long, and tomentose. Leaves entire, stalked, oblong, narrowed at the base or rounded, rugose; the lowermost white with wool beneath. Floral leaves sessile, ovate, acuminate, membranous and striated at the base. Racemes nearly simple. Whorls many-flowered, distinct. Calyx campanulate, membranous, coloured, striated, downy; upper lip 3-toothed, lower bifid: all the teeth subulate, acuminate. Corolla 2 or 3 times as long as the calyx, with a large projecting tube, ringed in the inside; the lips erect, the upper straight, the lateral lobes of the lower one reflexed. Connective lengthened backwards with an anther at each end, but the lower anther empty and connate with that next it. *Bentham.* — A tea made of the leaves has the reputation of being a stomachic. Their aromatic and bitter qualities render them fit to assist the stomach in digesting rich or greasy meats; on which account they are so much employed in cookery.

1009. S. grandiflora *Ettl.* is said to possess the same properties as the last, and in a more concentrated degree.

ROSMARINUS.

Calyx ovate-campanulate, 2-lipped; the upper lip entire, the lower bifid. Corolla not ringed in the inside, somewhat inflated in the throat, with 2 equal lips, the upper of which is emarginate and erect, the lower trifid, with the middle lobe very large, concave, and hanging down. Stamens 2; filaments shortly toothed near the base; anthers linear, with 2 divaricating confluent cells. Upper lobe of style very short.

1010. R. officinalis *Linn. sp. pl.* 33. *Flora Græca* t. 14. *S. and C.* i. t. 24. *Bentham labiatæ* 315. — Dry rocky hills in the warmer parts of Europe, and the basin of the Mediterranean; also in Asia Minor. (Rosemary.)

A shrub growing 3–4 feet high, densely leafy. Leaves sessile, linear, quite entire, revolute at the edge, hoary beneath. Flowers few, in short axillary racemes, close together, opposite, subsessile. Bracts or floral leaves shorter than the calyx. Calyx purplish. Corolla a dull

leaden blue, or white, with the tube protruding a little beyond the calyx. — Has been employed as a cephalic medicine, relieving headach and exciting the mind to vigorous action. It is principally remarkable for its undoubted power of encouraging the growth of hair and curing baldness; it is in fact what causes the green colour of the best Pomatums used for that purpose; an infusion of it prevents the hair from uncurling in damp weather; it is moreover one of the plants employed in the manufacture of *Hungary water*, the French *vinaigre aux quatre voleurs*, and *Eau de Cologne*. The admired flavour of Narbonne honey is ascribed to the bees feeding on the flowers of this plant.

1011. Monarda fistulosa *Linn.* is decidedly bitter as well as aromatic, and has been employed in the United States as a febrifuge.

1012. Monarda punctata *Linn.* abounds with camphor, and has been employed as an antispasmodic, and to relieve the nausea which attends the bilious fevers of America.

AMARACUS.

Calyx ovate, campanulate, 13-nerved at the base, smooth inside; upper limb long, entire, erect, lower truncate, minute. Corolla with the tube projecting beyond the calyx, as long as the imbricated bracts; the upper lip erect, emarginate, nearly flat, the lower spreading, with 3 nearly equal entire lobes. Stamens 4, projecting, didynamous, scarcely apart; anthers with distinct diverging cells. Upper lobe of the style shorter than the other.

1013. A. Dictamnus *Benth. lab.* 333. — Origanum Dictamnus *Linn. sp.* 823. *Bot. Mag.* t. 298. — Rocks of Candia. (Dittany of Crete.)

A procumbent woolly shrub, about 1 foot high, with ascending branches. Leaves sessile or short-stalked, subsessile, broad-ovate, obtuse, entire, rounded at the base, thick, soft, woolly on each side. Spikes on short stalks, about an inch long. Bracts loosely imbricated, sessile, roundish, entire, smooth, membranous, coloured at the apex, the exterior finely 5-nerved. Corolla not spurred. — Aromatic and tonic, once in much repute among the Greeks and Romans, but not now used.

ORIGANUM.

Calyx ovate, tubular, 10–13-nerved, striated, with nearly 5 equal teeth; the throat shaggy inside. Corolla with the tube almost the length of the calyx; the upper lip suberect, emarginate, the lower spreading, trifid, with nearly equal lobes. Stamens 4, protruding, distinct, somewhat didynamous. Lobes of style nearly equal.

1014. O. vulgare *Linn. sp. pl.* 824. *Eng. Bot.* t. 1143. *Bentham labiat.* 335. — Europe, on chalky downs, and elsewhere, the Mediterranean, and central Asia. (Wild Marjoram.)

An erect, hairy, perennial herbaceous plant, with a stem from 6 inches to 2 feet in height. Leaves stalked, broad-ovate, obtuse, subserrate, rounded at the base, green on both sides. Spikes oblong, or cylindrical, clustered, in corymbose panicles. Bracts ovate, obtuse, coloured, at least half as long again as the calyx. *Bentham.*—This plant yields what is called *oil of thyme* in the shops, a common remedy for the pain of toothach in carious teeth. It is frequently used, mixed with olive oil, as a stimulating liniment against baldness, in rheumatic complaints, and against sprains and bruises.

1015. Thymus vulgaris *Linn.* is fragrant and stimulating; its essential oil is administered to remove flatulence.

1016. Thymus Serpyllum *Linn.* and many others have the same properties.

HYSSOPUS.

Calyx tubular, 15-nerved, equal or oblique at the orifice, with 5 equal teeth; naked inside. Corolla with the tube as long as the calyx; the upper lip flat, erect, emarginate, the lower spreading, trifid, with the middle lobe larger. Stamens 4, protruding, diverging, didynamous. Anthers with linear divaricating cells.

1017. H. officinalis *Linn. sp.* 796. *Jacq. austr.* t. 502. *Bentham lab.* 356. — H. angustifolius *Bieberst. fl. taur. cauc.* ii. 38. iii. 389. H. orientalis *Willd. enum.* ii. 600. — South of Europe, and centre of Asia. (Hyssop.)

The whole plant nearly or quite smooth; or in some varieties villous. Stem woody at base, spreading, very much branched. Branches rod-like, 1–2 feet long. Leaves sessile, usually oblong-linear, or lanceolate, sometimes elliptical, sometimes narrower, green on each side, rather thick, 1-ribbed underneath. Whorls consisting of from 6 to 15 flowers, 1-sided, in a terminal spike. Floral leaves like those of the stem but smaller. Outer bracts lanceolate-linear, acute, scarcely shorter than the calyx. Corolla blueish-purple, rarely white. — A stimulating stomachic, considered serviceable in hysterical complaints and in relieving flatulence.

1818. Cunila Mariana *Linn.* is, according to Barton, employed beneficially in slight fevers and colds, with a view to excite perspiration.

HEDEOMA.

Calyx ovate, tubular, rather gibbous at the bottom on the under side, with 13 striæ; upper lip 3-toothed, lower bifid; throat villous. Corolla with the tube as long as the calyx, or a little longer; the upper lip erect and flat, the lower spreading, trifid, with nearly equal lobes, or the middle one rather broader, entire or emarginate. Stamens 2, ascending; cells of the anthers diverging.

1019. H. pulegioides *Pers. synops.* ii. 131. *Benth. lab.* 366.

— Melissa pulegioides *Linn. sp.* ed. i. 593. Cunila pulegioides *Linn. sp.* 30. Ziziphora pulegioides *R. and S.* i. 209. — North America, from Canada to Mexico.

A slender herbaceous plant, about a foot high. Leaves ½ an inch long and more, stalked, ovate, narrowing to each end, somewhat serrated, flat, downy. Floral leaves of the same form. Whorls axillary, 6-flowered. Corolla downy externally, as long as the calyx, the teeth of which are subulate and ciliated. — This plant has a great reputation as an emmenagogue in North America where it is called *Pennyroyal.*

1020. Melissa Calamintha *Linn.* (the Calamint), and Melissa officinalis *Linn.* (common Balm) are aromatic and slightly bitter, and are used by country people in the form of tea, as a grateful fever drink.

1021. Scutellaria lateriflora *Linn.* has been extolled in North America as a remedy for hydrophobia, but upon no good grounds.

NEPETA.

Calyx tubular, 13–15-nerved, usually incurved, obliquely 5-toothed, seldom equal at the orifice. Corolla with the tube slender at the base, enlarged at the throat; the upper lip straight, somewhat concave, the lower spreading with the middle lobe, if more than one, large and concave. Stamens didynamous, the lower ones the shortest; anthers usually approximated in pairs, with the cells diverging and finally divaricating.

1022. N. Cataria *Linn.* when bruised, appears to act as a real aphrodisiac upon cats, its stimulating properties deserve to be examined. It is said to have been advantageously exhibited in amenorhœa.

1023. N. Glechoma *Benth. lab.* 485. — Glechoma hederacea *Linn. sp.* 807. *Eng. Bot.* t. 853. — By waysides, and in dry ditches all over Europe and the north of Asia. (Ground Ivy.)

A procumbent, grey, hairy, herbaceous plant, with long rooting stems. Leaves stalked, roundish, crenated, deeply cordate so as to acquire a reniform figure, green on each side. Floral leaves of the same form. Whorls axillary, few-flowered. Bracts scarcely so long as the pedicel. Calyx long, curved, villous, with the limb oblique, and the teeth lanceolate-subulate, the upper being the largest. Corolla light greyish-blue, 3 times as long as the calyx. — A favourite herb with country people for making a tea against pectoral and other complaints; it is said to have been serviceable in hypochondriacal complaints and monomania. *Burnett.*

LEONURUS.

Calyx 5-nerved, turbinate, nearly equal; the mouth truncated, with 5 subulate spiny teeth. Corolla with the tube enclosed, naked, or obliquely ringed inside; upper lip oblong, entire,

lower spreading, trifid, with the middle lobe obcordate. Stamens didynamous. Anthers approximated in pairs, with parallel transverse cells and naked valves. Achænia truncate at the apex.

1024. L. Cardiaca *Linn. sp. pl.* 817. *Eng. Bot.* t. 286. *Smith Eng. Fl.* 104. *Benth. lab.* 518. — Hedges all over Europe and the middle of Asia. (Motherwort.)

Herb bitter, with a pungent disagreeable smell. Stems 2 or 3 feet high, wand-like, minutely downy, acutely quadrangular, with intermediate channels, purplish, beset with numerous pairs of long-stalked, dark green, somewhat downy, leaves; the lowermost broadest, and deeply jagged; upper ones acutely 3-lobed; those about the summit lanceolate and undivided. Whorls numerous, axillary, many-flowered. Calyx rigid and pungent. Corolla purplish; the upper lip clothed with dense, white, shaggy, upright hairs; lower deeply coloured, variegated, smooth, in 3 nearly equal entire lobes. — The reputed tonic powers of this herb, and its use in palpitations of the heart, or in that disease of the stomach called heart-burn, are now little regarded. Yet hence originated its old appellation of Cardiaca. *Smith.* — A stimulant, which has been extolled by the Russians as a preservative against canine madness. *Burnett.*

1025. Galeopsis ochroleuca *Lam.* is well spoken of as an expectorant, and in phthisical complaints.

STACHYS.

Calyx tubular, campanulate, 5–10-ribbed, with the mouth equally or obliquely 5-toothed. Corolla with an equal cylindrical tube, usually incurved upwards, not dilated at the throat; upper lip erect, lower spreading, and 3-lobed, with the middle lobe very large. Stamens didynamous, usually, after bursting, turning towards the sides of the throat; filaments naked; anthers approximated, with distinct parallel divaricating or diverging cells. Style equally bifid. Achænia obtuse.

1026. S. Betonica *Benth. lab.* 532.—Betonica officinalis *Linn. sp. pl.* 810. *Eng. Bot.* t. 1142. *Smith Eng. Fl.* iii. 97. — In most parts of Europe, and in Russia in Asia. (Betony.)

Root rather woody. Stem leafy, rough with reversed bristles. Leaves oblong, with numerous, strong, bluntish serratures; the lowermost on long stalks. Flowers crimson, rarely white, forming a dense spike, various in length; the lowest whorl a little remote, with a pair of small sessile leaves beneath. Bracteas purplish, lanceolate, entire. Lower lip of the corolla more or less notched, or slightly cloven. — This herb is scarcely aromatic, but the fine rigid hairs, which cover the surface, cause it when powdered to produce sneezing. Hence Betony is generally made an ingredient in herb-snuffs. The root is said to be emetic and purgative. *Smith.*

MARRUBIUM.

Calyx tubular, 5–10-nerved, equal; with 5–10 acute spiny teeth. Corolla with the upper lip erect, the lower spreading and trifid, with the middle lobe broader and generally emarginate. Stamens didynamous, enclosed; anthers with divaricating, somewhat confluent lobes, all nearly of the same form. Style with short obtuse lobes.

1027. M. vulgare *Linn. sp. pl.* 816. *Eng. Bot.* t. 410. *Woodv.* t. 97. *Smith Eng. Fl.* iii. 103. *Bentham lab.* 591. — M. hamatum *HBK. n. g. et sp.* ii. 310. M. apulum *Tenore fl. nep.* t. 154. — Waste ground all over Europe and the middle of Asia; also various parts of both North and South America. (Horehound.)

Stem bushy, branching from the bottom, bluntly quadrangular, leafy, clothed with fine woolly pubescence. Leaves on longish stalks, except the upper ones, which are nearly sessile; their shape and size, as well as the degree of their woolliness, various; their surfaces wrinkled and veiny. Flowers white, in dense convex whorls. Calyx-teeth rigid, recurved at the point, all spreading; the 5 alternate ones smallest; orifice of the tube hairy. — The whole herb has a white or hoary aspect, and a very bitter, not unpleasantly aromatic, flavour. Its extract is a popular remedy for coughs and asthmatic complaints. *Smith.* It has been recommended in chlorosis and hysteria as stimulating and tonic; and also in the treatment of intermittents. An infusion of the leaves has been found serviceable in chronic catarrh and humoral asthma. Made into syrup or confection and candied with sugar they form a popular remedy for slight coughs; the plant although not much used professionally, appears to deserve more attention than it now receives. *Burnett.*

1028. Teucrium Marum *Linn.* seems to be a genuine feline aphrodisiac; its active properties deserve investigation

ANISOMELES.

Calyx ovate-tubular, equal, 5-toothed. Corolla with a hairy ring inside; the upper lip oblong, erect, entire, the lower larger, spreading, with the lateral lobes ovate, obtuse, the middle one emarginate and somewhat bifid. Stamens didynamous, the 2 lowest the largest; the anthers approximated in pairs; those of the longer stamens halved, of the shorter 2-celled, with parallel transverse cells. Style equally bifid.

1029. A. malabarica *RBr. in Bot. mag.* t. 2071. *Hooker Journ. Bot.* i. 225. t. 127. *Benth. lab.* 704. — Nepeta malabarica *Linn. mant.* 566. Ajuga fruticosa *Roxb. fl. ind.* iii. 1. — East Indies and Isle of France.

Stem erect, 2–5 feet high, 4-sided, with obtuse angles. Branches numerous, axillary, ascending. Leaves petiolate, ovate-lanceolate, obtuse, crenate, except at the base which is entire, strongly reticulated

with prominent veins beneath, wrinkled above, clothed with whitish down on both sides, but less so than the stem. Flowers collected into short, pedunculated, axillary clusters, which spread round the stem, forming whorls, of which the uppermost are so close, as to constitute an uninterrupted spike. Bracteas filiform, pubescent, nearly the length of the calyx, 1 or 2 to each flower. Calyx 5-cleft, 10-angled, thickly covered with long, white, somewhat viscid pubescence. Corolla 2-lipped; upper lip entire, shorter than the stamens, obtuse, white; under one large, 3-cleft, lateral divisions obtuse, reflexed, the middle one orbicular, 2-lobed, with the sides bent downwards: throat hairy, spotted with purple and marked with a streak of the same colour down the middle. Stamens ascending, hairy. Anthers deep purple, opening transversely, the longer ones 1-celled, the shorter ones 2-celled; the cells transverse. Stigma 2-cleft, with divaricated lobes. *Wight.* — Patients suffering from ague are made to inhale the vapour arising from an infusion of this plant. Copious perspiration ensues, which is kept up for some time by drinking more of the infusion. *Wight.* The leaves which are bitter and astringent are taken in India to assist digestion, and to impart tone to the stomach.

VERBENACEÆ.

Nat. syst. ed. 2. p. 277.

VITEX.

Calyx campanulate, 5-toothed. Corolla bilabiate; the upper lip bifid, the lower trifid, with the middle segment largest. Stamens somewhat protruding; anthers oval, erect. Style filiform; stigma bifid. Drupe globose, 4-celled, 4-seeded.

1030. V. trifolia *Linn. sp. pl.* 890. *Roxb. fl. ind.* iii. 69. — (*Burm. zeyl.* t. 109. *Rheede* ii. t. 10. *Rumph.* iv. t. 18.) — Various parts of the East Indies.

Young shoots round and villous. Leaves opposite, ternate. Leaflets all sessile, ovate, oblong, entire, hoary underneath; the pair from 1 to 2 inches long, and the terminal one much longer; petioles about an inch long, and hoary. Panicles terminal, linear-oblong, composed of brachiate and dichotomous ramifications; every part hoary. Flowers small, of a lively light blue colour. Bracts minute. Calyx campanulate, hoary; mouth slightly 5-toothed. Corolla with the lower lobe longer and undivided; the lower lateral ones turned up against the upper lip, which appears 4-lobed. Stamens as long as the corolla. Ovary round, 2-celled; style as long as the corolla; stigma of 2 filiform spreading lobes. Drupe round, smooth, when ripe black, size of a small pea, the stone of the same shape as the drupe, 4-celled. Seeds solitary. Albumen, when the seeds are quite ripe, none. Embryo

erect. Cotyledons obovate-oblong. Radicle oval, inferior. — The leaves are a powerful discutient and employed by the Malays to remove the boss. The leaves are given in decoction and infusion and formed into a cataplasm which is applied to the enlarged spleen. *Roxb.* The fruit is acrid, and called in India *filfil burree* or wild pepper.

1031. V. Agnus castus *Linn.* has similar acrid fruit. According to Forskahl, the seeds are reputed at Smyrna to be a certain remedy against colic, if powdered and strewed over half an onion applied to the stomach.

1032. V. Negundo *Linn. sp. pl.* 890. *Roxb. fl. ind.* iii. 70. — (*Rheede* ii. t. 12. *Rumph.* iv. t. 19.) — Various parts of the East Indies.

Trunk irregular, often as thick as a man's thigh or more. Branches rather thin, opposite; young shoots downy, slightly 4-sided. Leaves opposite, petioled, ternate, and quinate. Leaflets, the exterior one or all three, petioled; the lower two sessile; all lanceolate, entire, soft; below of a very pale whitish green; from 2 to 4 inches long, and less than 1 broad. Panicles terminal, oblong, tapering to a point, erect; rachis straight, 4-sided; ramifications decussated, generally 3-forked, or 2-forked with sessile flowers in the cleft. Flowers small, numerous, a most beautiful blueish-purple. Calyx permanent, closely embracing the bottom of the berry. Corolla with the lower lip large, entire; upper lip shorter, 4-parted. — In India a decoction of the aromatic leaves helps to form the warm bath for women after delivery; bruised they are applied to the temples for headach; pillows stuffed with them are put under the head to remove a catarrh and the headach attending it. *Roxb.* Fruit acrid as in the two others.

1033. Gmelina parviflora *Roxb.* has the power of rendering water mucilaginous, which is employed as a ptisan for the cure of the heat of urine in gonorrhœa in India. *Roxb.*

1034. Callicarpa lanata *Roxb.* is bitterish and subaromatic, and is employed in Indian medicine. *Royle.*

1035. Congea villosa *Roxb.* has leaves with a strong heavy disagreeable smell, used by the natives of India in fomentations. *Roxb.*

STACHYTARPHA.

Calyx tubular, 4-toothed. Corolla hypocrateriform, unequal, 5-cleft, with a curved tube. Stamens 4, of which 2 only are fertile.

1036. S. jamaicensis *Vahl. enum.* i. 206. *R. and S.* ii. 203. —Verbena jamaicensis *Linn. syst. veg.* 66. *Willd.* i. 115. *Jacq. obs.* iv. t. 85. (*Sloane*, t. 107. f. 1.) — West India Islands.

An undershrub with scattered hairy branches. Leaves about 2 inches long, oblong-ovate, coarsely and sharply serrated, quite entire at the base, obtuse, sometimes acute, with a few hairs on the midrib. Spike a span long, dense, not so thick as a goose's quill. Bracts ovate, shorter than the calyx, with their margin near the bottom membranous.

Flowers lilac. — The expressed juice of the leaves is given in Tortola, as a cooling purgative to children, in doses of 1 or 2 table-spoonfuls. In the French West India Islands, it is employed in decoction for clysters, and also as an anthelmintic. It has, moreover, some reputation for promoting the menstrual discharge. In Brazil the fresh leaves bruised are applied to ulcers; it is then called *Urgeráo*, or *Jarbáo*.

*** Premna integrifolia *Linn.*, Volkameria inermis *Linn.* and some others have been occasionally employed in medicine, on account of their slightly bitter, and subastringent qualities, but they do not appear to be of any importance.

BIGNONIACEÆ.

Nat. syst. ed. 2. *p.* 282.

CATALPA.

Calyx 2-parted. Corolla campanulate, with a ventricose tube, and a 4-lobed unequal limb. Stamens 5, of which 3 are sterile. Stigma of 2 plates. Capsule siliquose, 2-valved, with a loculicidal dehiscence. Seeds with a lacerated fringed membrane at each end.

1037. C. syringifolia *Sims Bot. Mag.* t. 1094. — C. cordifolia *Elliott bot. of Car.* i. 24. Bignonia Catalpa *Linn. sp. pl.* 868. — Southern States of the American Union.

A tree with a round spreading head, growing from 30 to 40 feet high. Leaves in threes, very broad, acuminate, cordate, smooth above, downy beneath; with a petiole 6 inches long. Panicle large, pyramidal, a foot long. Segments of the calyx, obovate, concave, mucronate, permanent. Corolla large, white; the tube campanulate, veined with purple and spotted with yellow inside; limb unequal, 5-lobed, with crenated lobes. The 2 fertile stamens as long as the corolla. Capsule cylindrical, above a foot long.— A decoction of the pods is used in Italy as a remedy for catarrhal dyspnœa and coughs. *Gard. Mag.* xiii. 524. According to Kæmpfer a nearly allied species, or perhaps the same, found in Japan has extremely bitter leaves and bark, and a decoction of the pods is employed in asthmatic complaints; the leaves are also used for fomentations.

1038. Bignonia antisyphilitica, *Mart.*

The bark of the younger branches of this tree is considered in Brazil one of the most powerful remedies against syphilitic swellings, which are of a malignant character. The decoction is chiefly used, and also the bark dried and pounded, externally.

PEDALIACEÆ.

Nat. syst. ed. 2. *p.* 281.

1038 *a.* Sesamum indicum *Linn.*
1038 *b.* Pedalium Murex *Linn.*

} have mucilaginous leaves, and the seeds, like linseed, yield a mucilaginous meal used in India for poultices.

ACANTHACEÆ.

Nat. syst. ed. 2. *p.* 284.

RHINACANTHUS.

Calyx regularly 5-parted, with small subulate bracts and bractlets. Corolla hypocrateriform, 2-lipped, with a long slender tube; the upper lip narrow, the lower trifid, with equal segments. Stamens 2, inserted in the throat of the corolla; anthers 2-celled, awnless, with 1 cell placed above the other almost in a line. Capsule clavate; at the base much compressed, with the commissure of the valves in contact, seedless; in the upper part 4-seeded or by abortion 2-seeded. Dissepiment complete, adnate. Seeds ovate, biconvex, augmented with hooks, which are concave and obtuse. *N. ab. E.*

1039. R. communis *N. ab E. in Wall. pl. as. rar.* iii. 109. col. i. — Justicia nasuta *Linn. sp. pl.* 63. *Roxb. fl. ind.* i. 20. *Bot. Mag.* t. 325. J. scandens *Vahl. symb.* ii. p. 7. (*Rheede* ix. t. 69.) — Continent of India.

Root woody, branched. Stems many, erect, branched, the old woody parts round, and covered with pretty smooth ash-coloured bark; the tender branches and young shoots jointed, smooth and obsoletely 6-sided. Leaves opposite, stalked, broad-lanceolate, obtuse, above smooth, below a little downy; entire, from 2 to 4 inches long, and from 1 to 2 broad. Panicles corymbose, axillary, and terminal, always 3-cleft as also the subdivisions. Peduncles and pedicels short, round, a little downy. Bracts minute. Flowers small, white. Corolla with a long slender compressed tube; the under lip broad, 3-cleft; upper lip erect, linear, sides reflected, apex, bifid. A fleshy ring surrounding the base of the ovary. Anthers projecting beyond the tube, twin. — Milk boiled on the roots is reckoned aphrodisiacal by the natives of India. Rubbed with lime juice and pepper they are often used, with good effect, to cure the ringworm or Herpes miliaris, which in India is a most troublesome disease, and very common. They are also reckoned alexipharmic.

1040. Justicia Ecbolium *Linn.* is said to be diuretic.

1041. Justicia pectoralis *Jacq.* is esteemed a stomachic in the West Indies.

1042. Justicia biflora *Vahl.*; and

1043. Acanthus mollis *Linn.* have emollient leaves, which are used for poultices.

GENDARUSSA.

Calyx regular, 5-parted, furnished at the base with small bracts. Corolla bilabiate; the upper lip arched, the tube short. Stamens 2, inserted below the throat of the corolla; connective

rhomboidal-lanceolate, oblique; cells of the anthers placed obliquely one above the other; the valves half-ovate, the lower calcarate. Capsule sterile below, and little narrowed; 4-seeded at the upper end. *Nees.*

1044. G. vulgaris *Nees von E. in Wall. pl. as. rar.* iii. 104. col. 1. — Justicia Gendarussa *Linn. suppl.* 85. *Roxb. fl. ind.* i. 28. *Jacq. ecl.* t. 11. (*Rumph.* iv. t. 28 and 29. *Rheede* ix. t. 42.) — Common in gardens on the continent of India; Amboyna and other islands in the Malay Archipelago.

A shrub, with dark purple, or green, smooth, shoots. Leaves short-stalked, lanceolate, obtuse, smooth, with the rib and veins dark purple. Spikes terminal, somewhat whorled, leafy at the base. Flowers reddish purple. — The leaves and tender stalks, when rubbed, have a strong and not unpleasant smell, and are after being roasted, prescribed in India in cases of chronic rheumatism attended with swelling at the joints. *Ainslie.* The plant is said to have emetic powers.

1045. Adhatoda Vasica *Nees* (Justicia Adhatoda *Linn.*) Both the flowers, leaves, and roots, are supposed to possess antispasmodic qualities, they are bitterish and subaromatic. *Ainslie.*

ANDROGRAPHIS.

Calyx deeply 5-parted, equal, with narrow segments. Corolla bilabiate; the upper lip entire or bifid; when resupinate appearing to be divided in the contrary way. Stamens 2; anthers 2-celled: cells parallel, bearded at the base. Capsule oval or lanceolate, depressed, 2-celled down to the base, 4-seeded or many-seeded. Dissepiment adnate. Seeds oval, obtuse, tapering, obliquely truncate at the base, pitted, with a deep hilum. Hooks stalked, dilated, scaly, deciduous. *Nees.*

1046. A. paniculata *Wall. cat.* No. 2454. *Nees in Wall. pl. as. rar.* iii. 116. col. 1. — Justicia paniculata *Burm. fl. ind.* 9. *Vahl. symb.* ii. 5. *Br. prodr.* 331. *Roxb. fl. ind.* i. 118. (*Rheede* ix. t. 56.) — Dry places in the East Indies, beneath the shade of trees; China.

Stem erect, generally annual, at least down to the root, branched, slender, 4-sided, jointed, smooth, 1 to 2 feet high. Branches opposite, decussate, 4-sided, spreading. Leaves opposite, short-stalked, lanceolate, entire, smooth; 2 or 3 inches long. Racemes terminal, and from the exterior axils horizontal, long, 1-sided. Flowers remote, rose-coloured, on long stalks, alternate, erect, downy. Bracts 2, large, opposite; bractlets 2, smaller, embracing the base of the pedicels. Corolla bilabiate. Tube recurved; lips linear, and reflected; the uppermost broadest, 3-toothed; the inferior 2-toothed. Filaments as long as the lips of the corolla, projecting, hairy; anthers very flat, obovate, firmly united at the base, and there bearded. Capsule erect, somewhat cylindrical. Seeds 3 or 4 in each cell, cylindrical. — This has been much celebrated as a stomachic, and used as a remedy for cholera and dysentery, and in intermittent fevers: it is the basis of a French mixture called *Drogue amère.* It is also said to be alexipharmic.

*** Several other Acanthaceæ are named in books, as having slight medical properties; they are chiefly emollients, but appear to be of no consequence.

SCROPHULARIACEÆ.

Nat. syst. ed. 2. *p.*288.

DIGITALIS.

Sepals 5, rounded or acute, permanent, much shorter than the corolla; the uppermost narrowest. Corolla ventricose, contracted at the base, with an oblique limb; upper lip emarginate, lower 3-fid with the middle lobe the largest. Stamens didynamous, inserted into the base of the corolla; anthers acute, naked. Stigma bilamellate. Capsule ovate, with a septicidal dehiscence.

1047. D. purpurea *Linn. sp. pl.* 866. *Eng. Bot.* t. 1297. *Woodv.* t. 24. *Smith Eng. fl.* iii. 140. — Pastures and by road sides in many parts of Europe. (Foxglove.)

A biennial; root of numerous long and slender fibres. Stem straight, wand-like, leafy, mostly simple, roundish, with several slight angles, downy, 3 or 4 feet high, leaves alternate, ovate or elliptic-oblong, crenate, downy, rugged and veiny, of a dull green; tapering at the base into winged footstalks; radical ones largest. Raceme terminal, 1-sided, erect, simple, of numerous, sometimes 60, large, pendulous, scentless, crimson flowers; elegantly marked with eye-like spots, as well as hairy, within. *Smith.* Seeds small, oblong, pale brown, pitted. The leaves and seeds of this plant, especially the former, in the state of powder, tincture, or infusion, afford one of the most valuable of known medicines, for the purpose of reducing the action of the heart, promoting the action of the absorbents, as a diuretic, and for producing a specific action over the cerebro-spinal system. It is employed very extensively in fevers, dropsy, inflammation, hæmorrhages, diseases of the heart, and in mania, epilepsy, spasmodic asthma and the like. It is very remarkable for its power on the system, sometimes accumulating till it suddenly shows itself with irresistible force, to the imminent risk of the life of the patient.

SCROPHULARIA.

Calyx 5-parted, or more frequently 5-cleft, nearly equal. Corolla globose, with a short 5-lobed limb, the segments of which are rounded, and the uppermost united into an upper lip. Stamens didynamous, declinate, with 1-celled transverse anthers; a fifth rudimentary stamen with a lamelliform anther, often present. Stigma emarginate. Capsule roundish, often acuminate, with the valves entire or just bifid.

1048. S. nodosa *Linn. sp. pl.* 863. *Eng. Bot.* t. 1544. *Smith Eng. Fl.* iii. 137. — Hedges woods and thickets in most parts of Europe. (Figwort.)

Herbage nearly or quite smooth, fetid like Elder when bruised. Root whitish, tuberous, beset with fleshy knobs. Stem 2 or 3 feet high, nearly simple, leafy, acutely quadrangular, smooth. Leaves stalked, ovate-oblong, acute, sharply and unequally serrated; heart-shaped at the base, where they are cut away, as it were, to the 2 small lateral ribs. Flower-stalks axillary and terminal, forked, angular, glandular, forming a panicled, leafy cluster. Bracteas lanceolate. Flowers a little drooping. Calyx smooth. Corolla of a dull green, with a livid purple lip. Capsule ovate-oblong. *Smith.* — Leaves and roots said to be purgative and emetic. They have a bitter taste, and a heavy disagreeable smell. A decoction of the leaves is used by farmers to cure the scab in swine. *Burnett.*

1049. S. aquatica *Linn. sp. pl.* 864. *Eng. Bot.* t. 854. *Smith Eng. Fl.* iii. 138. — Ditches and watery places in many parts of Europe. (Water Betony.)

Root entirely fibrous. Herb quite smooth, fœtid, of a deep shining green. Stem taller than S. nodosa, straight, leafy, nearly simple, winged in some degree at the four angles. Leaves copiously and finely serrated, veiny, ovate-oblong; heart-shaped at the base, and running down the edges of the footstalks; their lateral ribs not reaching to the margin of the leaf. Cluster of many forked branches, bearing numerous flowers, whose tube is green, the limb of a dark blood-red, more conspicuous than in S. nodosa. Capsule globular. *Smith.* — Properties much as in the last species. Burnett however says that they cannot be very unwholesome plants, because the garrison of Rochelle, during the celebrated siege by Cardinal Richelieu in 1628, supported themselves in their extremity by eating the roots of S. aquatica, which has since that time been called by the French, *herbe du siége*.

HERPESTES.

Calyx 5-parted; the upper sepal very large, ovate, the 2 lowest narrower, the 2 lateral ones linear and covered by the rest. Corolla tubular, somewhat 2-lipped; the upper lip bifid, the lower trifid, with all the segments flat and nearly equal. Stamens didynamous, enclosed; anthers approximated in pairs, with diverging or divaricating segments which finally become somewhat confluent. Capsule scarcely furrowed, 4-valved, with the edges of the valves flat.

1050. H. Monniera *HBK. n. g. et. sp.* ii. 294. *Benth. scroph. ind.* 30. — Gratiola Monniera *Linn. amœn. acad.* iv. 306. *Roxb. fl. ind.* i. 141. Monniera Brownei *Pers. syn.* i. 116. M. cuneifolia *Mx. fl. bor. am.* ii. 22. Herpestes cuneifolia *Pursh. fl. am. sept.* ii. 418. H. procumbens *Spreng. syst.* ii. 802. Bramia indica *Lam. enc.* i. 459. Calytriplex obovata *R. and P. fl. peruv. prodr.* t. xix.— Tropical parts of the world in both hemispheres.

Stems several, annual, creeping, round, jointed, very branching,

smooth, succulent. Leaves opposite, sessile, obovate, wedge-shaped or oblong, smooth, entire, obtuse, fleshy, dotted with minute spots. Peduncles axillary, alternate, solitary, round, smooth, shorter than the leaves, one-flowered. Flowers blue. Bractes 2-awled, pressing on the calyx laterally. Calyx 5-leaved, the exterior three leaflets large, oblong, the two interior small linear; all are concave, smooth, pointed and permanent. Corolla campanulate; border 5-parted, nearly equal. Anthers 2-cleft at the base, blue. Stigma large, somewhat 2-lobed. Capsule ovate, 2-celled, 2-valved. Seeds very numerous. *Roxb.* — The natives of India use the expressed juice, mixed with Petroleum, to rub on parts affected with rheumatic pains.

1051. H.? amara *Benth. scroph .ind.* 30. — Gratiola amara *Roxb. fl. ind.* i. 135. — Moluccas.

Root fibrous. Stems and branches creeping, with their extremities suberect, 4-sided, coloured, smooth. Leaves opposite, petioled, cordate deeply serrate, somewhat rugose, of a soft texture, but free of pubescence; in general about 2 inches long. Peduncles axillary, solitary, rather longer than the petioles, supporting at their extremities 2 or 3 pairs of opposite pedicelled flowers. Bractes small, oblong, one under the insertion of each pedicel. Calyx of 2 pair of opposite leaflets, exterior pair large, cordate, often notched; the upper one larger and incumbent over the rest of the calyx and all the corolla except the under lip; inner or lateral pair linear-lanceolate, and much smaller than the exterior pair. Corolla bilabiate; tube contracted at the middle; upper lip straight, narrow with a 2-lobed apex; under lip broad, 3-lobed, drooping. Stamina; the fertile pair of filaments lodged under the upper lip of the corolla, with twin anthers, adhering by pairs, the sterile pair from the under lip, with large, yellow, free, clavate apices. Stigma 2-lobed. Capsules ovate, 2-celled, hid between the exterior leaflets of the calyx. Seeds numerous, very small. — The leaves are excessively bitter, and might no doubt answer valuable purposes in medicine. *Roxb.*

CALCEOLARIA.

Calyx 4-parted. Corolla rotate, 2-lipped; the upper lip very small and convex, the lower distended into a large pouch. Stamens 2, with 1-celled transverse anthers. Capsule half 2-valved; valves bifid.

1052. C. trifida *Fl. Peruv.* i. 17. t. 26. *b. Vahl. enum.* i. 185. — Woods of Peru, in watery places. (Tumpu.)

Stem suffruticose, 2–3 feet high, branched, nearly smooth. Leaves cordate-ovate, obtuse, serrated, the lower opposite and stalked, the upper ternate, sessile, covered with glandular hairs; petioles connate. Peduncles axillary and terminal, umbellate, hoary. Corolla yellow. — Leaves are said to be tonic and febrifugal.

1053. C. pinnata *Linn. mant.* 171. *Vahl. enum.* i. 189. *Act. holm.* 1770. t. 8. *Bot. Mag.* t. 41. — Damp places in Peru.

An annual about 2 feet high, hairy and viscid all over. Leaves stalked, all pinnated, with toothed leaflets, or even pinnatifid ones at the lower part of the stem. Peduncles 2 or 3 together. Sepals ovate

cordate, very spreading. Flowers pale yellow. — Leaves said to be purgative and emetic.

LINARIA.

Calyx 5-parted. Corolla personate, with a short inflated tube, calcarate at the base, with the palate prominent or occasionally depressed. Stamens hairy at the base. Style thickened at the apex or bifid; stigma emarginate or 2-lobed. Capsule opening by pores, or opercular valves, or teeth.

1054. L. vulgaris *Ait. hort. Kew.* ed. 2. iii. 17. *Chavannes monogr.* p. 131. — Antirrhinum Linaria *Linn. sp. pl.* 858. *Eng. Bot.* t. 658. *Woodv.* t. 221. *Smith Eng. Fl.* iii. 134. — Common in Europe by the sides of hedges and ditches. (Toadflax.)

Root creeping, somewhat woody. Herbage smooth, bright green, scarcely at all glaucous. Stems 2 feet high, densely clothed with scattered narrow acute leaves, terminated by a spike of rich yellow large flowers. Palate of the corolla downy and orange-coloured; spur pendulous, as long as the tube, and twice as long as the calyx. Calyx smooth. Capsule opening with 4 or 5 lanceolate valves to each cell. — Reputed to be purgative and diuretic. It is bitter. Its flowers have been recommended in decoction as a wash for chronic diseases of the skin; and that it would not be an inactive lotion seems probable from the fact that in London the plant is occasionally boiled in milk for the purpose of destroying flies. *Burnett.*

1055. L. Cymbalaria *Ait. hort. Kew.* ed. 2. iii. 10. *Chavannes monogr.* p. 98. — Antirrhinum Cymbalaria, *Linn. sp. pl.* 851. *Eng. Bot.* t. 502. *Smith Eng. Fl.* iii. 131. — On old walls in many parts of Europe, especially the southern. (Ivy-leaved Snapdragon.)

Stems long, pendulous, filiform, very much branched and entangled, smooth, hanging from old walls in graceful festoons. Leaves cordate, 5-lobed, alternate, smooth, not unlike those of Ivy. Flowers solitary, on long axillary stalks, small, variegated with violet and blue; the palate yellow, the spur short and pointed. Capsule roundish, much and irregularly torn at the top. Seeds black, wrinkled. — Has a warm cress-like flavour, and has been recommended as an antiscorbutic. Hamilton says, that in India it is given with sugar in cure of diabetes, and from the report of its influence over that disorder, it well deserves to be tried by the European practitioner. It is, however, probable that Dr. Hamilton's remarks do not apply to this plant, which does not grow in India, but to *L. ramosissima* Wall., a nearly allied species.

1055 *a.* Linaria Elatine *Ait.* is said to be bitter and purgative.

VANDELLIA.

Calyx tubular or campanulate, nearly equal, 5-toothed or 5-parted. Corolla exserted, bilabiate, 5-cleft; upper lip shortest. Stamens didynamous, the 2 upper shortest with entire filaments, the 2 lower inserted at the base of the lower lip, with long curved filaments having a tooth-like or filiform appendage at the base. Anthers adhering in pairs, 2-celled, with diverging or divari-

cating cells confluent at the apex. Capsule globose, oblong, or linear, 2-valved; valves entire, membranous.

1056. V. diffusa *Linn. mant.* 89. *Benth. scroph. ind.* 37. — Brazil, Guayana, Isle of France.

Diffuse, pubescent. Leaves broad-ovate, subsessile. Flowers axillary, sessile. Calyx somewhat 5-cleft, twice as short as the oblong capsule. *Benth.* — Of great value in Guayana as an antibilious emetic and febrifuge, and a most efficacious remedy in malignant fevers and dysentery, especially in cases depending on a disordered state of the liver. *Hancock*, in *Med. Bot. Trans.* 1829, p. 9. It is called Haimarada by the Arowak Indians, and Bitter Blain by the Dutch creoles.

1057. Torenia asiatica *Linn.* The juice of the leaves is considered on the Malabar coast a cure for gonorrhœa.

PICRORHIZA.

Calyx leafy, campanulate, almost equally 5-cleft. Corolla campanulate, shorter than the calyx, nearly equally 4-cleft, with the segments entire. Stamens 4, inserted in the throat of the corolla, nearly equal, diverging, projecting some distance. Anthers 2-celled, with the cells confluent at the apex. Valves of the capsule septiferous in the middle, bipartible, with a double dissepiment. Seeds inclosed in a bladdery arillus-like membrane.

1058. P. Kurroa *Royle illustr.* p. 291. t. 71. *Benth. scroph. ind.* 47.—Veronica? Lindleyana *Wall. cat.* No. 404. — Gossain Than, Kamaon and Kedarkonta.

A fleshy rooted perennial. Stems very short, ascending. Leaves obovate, tapering to the base, serrated, smooth or nearly so, scape erect, naked. Flowers sessile, deep blue, in dense spikes. — The root is intensely bitter, and used in the native medicine of India.

EUPHRASIA.

Calyx campanulate, 4-cleft. Upper lip of the corolla galeate. emarginate, lower larger, spreading, with the middle lobe emarginate. Stamens 4, fertile; lower cells of the upper anthers with a long spur. Capsule oblong-ovate, compressed, emarginate, with entire valves. Seeds few in number, with a somewhat striated membranous skin.

1059. E. officinalis *Linn. sp. pl.* 841. *Eng. Bot.* t. 1416. *Smith Eng. Fl.* iii. 122. *Benth. scroph. ind.* 51. — Heaths and pastures of Europe, the Himalaya mountains, Cachmere, and all the north of Asia. (Eyebright.)

An elegant little plant, varying in height from 1 inch to 4 or 5, with a square, downy, leafy stem, either simple or branched. Leaves ¼ or ½ an inch long, almost entirely opposite, ovate or heart-shaped, downy, strongly ribbed and furrowed, with sharp tooth-like serratures. Flowers axillary, solitary, very abundant, inodorous, but remarkable for

their brilliant variegated aspect, on which account it seems, the plant became celebrated as good for weak eyes. The corolla varies much in size as well as colour, being commonly white, with deep purple streaks, and a yellowish palate; the anthers violet. On the mountains of Scotland there is a more slender variety, with smaller but more richly tinted blossoms; on the Alps a dwarf, large flowered, more purple variety is common. The seeds are few, somewhat angular, thin at the edges, strongly striated, or furrowed, at the sides. *Smith.* — Slightly bitter and aromatic. It has had much reputation in diseases of the eye, but has generally fallen into disrepute. It has, however, lately been asserted by Professor Kranichfeld, that it is particularly useful in catarrhal inflammations of the eye. He has also found it beneficial in cough, hoarseness, earache and headache, which have supervened in catarrhal affections. *Med. Gaz.* xx. 528.

GRATIOLA.

Calyx 5-parted as far as the base. Corolla resupinate, unequally 4-lobed. Stamens 2 fertile, 2 sterile. Capsule 2-celled, with a septicidal dehiscence.

1060. G. officinalis *Linn. sp. pl.* 24. *Fl. dan.* t. 363. *R. and S.* i. 129. *Schkuhr. handb.* t. 2. *a.* — Marshes of Europe. (Hedge hyssop.)

Root creeping, jointed. Stem 1–2 feet high, erect, simple or a little branched, smooth, 4-sided at the upper end. Leaves half amplexicaul, 1–2 inches long, smooth, obtuse, lanceolate, serrated, with about 3 veins, entire near the base. Flowers solitary, on long stalks; with 2 linear bracts below the calyx. Corolla whitish striped with red, sometimes white; tube longer than the calyx, covered inside with yellow hairs; upper lip reflexed, emarginate, Capsule ovate, acuminate. — A very active plant, formerly called *Gratia Dei*, on account of its efficiency as a medicine. It is extremely bitter, acts violently both as a purgative and emetic, and has been said to be the basis of the famous gout medicine, called *Eau Médicinale*, which, as its active principle appears to be of the nature of Veratria, is not improbable. Gratiola is said to have been found serviceable in cases of hypochondriasis. In overdoses it is a violent poison, and according to Haller, it renders by its abundance some of the Swiss meadows useless as pastures. G. peruviana *Linn.* has purgative and emetic leaves and roots.

1061. Scoparia dulcis *Linn.* An infusion is used by the Indians of Spanish America to cure agues, according to Humboldt. Martius however states that in Brazil, where it is called *Basourinha* or *Vacourinha* the expressed juice is merely mucilaginous and employed as a cooling laxative.

1062. Verbascum nigrum *Linn.* is accounted slightly narcotic. The seeds of it and of 1063. V. Thapsus *Linn.* are said to be used by poachers to poison fish. The flowers of 1064. V. Lychnitis *Linn.* are used in many places as a poison for mice.

SOLANACEÆ.

Nat. syst. ed. 2. p. 293.

HYOSCYAMUS.

Calyx tubular, inflated at the base, 5-toothed, permanent. Corolla funnel-shaped, irregular, with a spreading unequal limb, divided into 5, obtuse segments. Filaments nearly equal. Stigma capitate. Capsule opening transversely by a convex lid, 2-celled, many-seeded.

1065. H. niger *Linn. sp. pl.* 257. *Eng. Bot.* t. 591. *Woodv.* t. 52. *Smith Eng. Fl.* i. 315. — Waste grounds and commons throughout Europe. (Henbane.)

Biennial. Stem from 6 inches to 2 feet high, taper, scarcely branched, covered closely with long weak hairs tipped with a minute black gland. Leaves sessile, occasionally somewhat decurrent, stem clasping, oblong, acute, coarsely and unequally slashed, pale dull green, slightly pubescent, with long glandular hairs, like those of the stem, upon the midrib. Flowers axillary, subsolitary, nearly sessile, embosomed in the uppermost leaves, than which they are much shorter. Calyx funnel-shaped, villous, 5-lobed, regular, wider than the corolla, to whose tube it is equal in length : each lobe ovate, acute, with an open æstivation. Corolla dull dirty yellow strongly netted with purple veins, and deep purple at the orifice, funnel-shaped, with a somewhat erect limb, which is 5-lobed; lobes rounded, the two anterior a little smaller than the others, and separated at the base by a deep slit in the tube. Stamens 5, declinate, straight, shorter than the corolla, the three lower longer than the others; filaments pubescent, inserted about the middle of the tube of the corolla. Ovary nearly round, shining, pale green, 2-celled, with numerous ovules adhering to the dissepiment; style filiform, declinate, purple at the apex; stigma capitate. Fruit an ovate, many-seeded pyxis. — A powerful narcotic, the capsules and seeds of which, smoked like Tobacco, are a rustic remedy for toothach, but convulsions and temporary insanity are said to be sometimes the consequence of their use. Used medicinally the leaves produce effects very similar to those of opium. It is employed with advantage in painful and spasmodic affections, hysteria, rheumatism and gout; also combined with colocynth in painters' colic and mania. It is also used externally to allay the irritation of very sensible parts; and the infusion dropped into the eye dilates the pupil like Belladonna.

ATROPA.

Calyx 5-parted, permanent, nearly equal. Corolla campanulate, with a very short tube; limb with 5 shallow nearly equal segments. Filaments nearly as long as the tube of the corolla; anthers cordate, 4-lobed. Stigma capitate. Berry 2-celled, many-seeded, subtended by the enlarged calyx.

1066. A. Belladonna *Linn. sp. pl.* 260. *Eng. Bot.* t. 592. *Woodv.* t. i. *Smith Eng. Fl.* i. 316. — Common in Europe in waste places and among ruins. (Dwale, Deadly Nightshade.)

Root fleshy, creeping. Whole plant fœtid when bruised, of a dark and lurid aspect, indicative of its deadly narcotic quality. Stems herbaceous, annual, 3 feet high, round, branched, leafy, slightly downy. Leaves lateral, mostly two together of unequal size, ovate, acute, entire, smooth. Flowers imperfectly axillary, solitary, stalked, drooping, dark dull purple in the border, paler downwards, about an inch long. Berry of a shining violet black, the size of a small cherry, sweetish, and not nauseous. *Smith.* — A dangerous narcotic. Every part of the plant is poisonous; and children and the ignorant have often suffered from eating the berries, the beautiful appearance and sweet taste of which render them very alluring. The symptoms which they induce are those of intoxication, accompanied with fits of laughter and violent gestures; great thirst, difficulty of deglutition, nausea, dilatation of the pupil, with the eyelids drawn down; redness and tumefaction of the face, stupor or delirium, a low and feeble pulse, paralysis of the intestines, convulsions and death. In medicine Belladonna is not only narcotic, but diaphoretic and diuretic. It is extensively employed especially in producing a dilatation of the pupil, when its infusion is dropped into the eye. Among other properties it is said by Hahnemann and Koreff to protect the individual who takes it from the contagion of Scarlatina.

CAPSICUM.

Calyx 5-cleft. Corolla rotate, equal. Filaments very short, equal; anthers converging, opening longitudinally. Fruit firm, succulent, 2-celled, containing numerous dry flat seeds, not mixed with pulp.

1067. C. annuum *Linn. sp. pl.* 270. *Willd. enum.* i. 241. *Plenck. offic. pl.* t. 107. (*Rheede* ii. t. 35.) — South America, Mexico, East Indies. (Chilly, Capsicum.)

An annual, of a dark green colour, almost smooth, growing 1 to 2 feet high. Stems angular, furrowed, branched. Leaves ovate or oblong, acuminate, long-stalked, almost entire, sometimes hairy on the veins underneath. Flowers white, solitary, axillary, pendulous, with dark-coloured anthers. Fruit of various forms, round, oblong, cordate, or horned, and either scarlet or yellow, in some varieties so little pungent as to be used sliced in salad, in others intolerably biting till the mouth becomes accustomed to it by habit. — The fruit and seeds are a powerful stimulant, without any narcotic property. The well-known condiment called Cayenne pepper consists principally of the ground seeds. It is employed in medicine, in combination with Cinchona in intermittents and lethargic affections, and also in atonic gout, dyspepsia accompanied by flatulence, tympanitis, paralysis, &c. Its most valuable application appears however to be in cynanche maligna and scarlatina maligna, used either as a gargle or administered internally.

1067 *a.* C. frutescens *Linn.* (Goat-pepper) — and 1 067 *b.* C. baccatum *Linn.* (Bird-pepper) have similar properties, but are more acrimonious.

DATURA.

Calyx oblong, tubular, 5-angled, 5-toothed, dropping off from its base by a circular horizontal incision, which remains permanently at the base of the ovary. Corolla funnel-shaped, regular, angular, plaited, with mucronate lobes. Stigma thick, obtuse, 2-lobed. Ovary 4-celled. Fruit dry, often prickly, half 4-celled, with 4 valves, and many seeds.

1068. D. Tatula *Linn. sp. pl.* 256. *Bigelow med. bot.* i. t. 1.— Common by roadsides in North America; probably introduced from Portugal and the South of France, where it is wild.

Stem erect, branched, smooth or slightly pubescent, hollow in large plants, often solid in small ones. Leaves 5 or 6 inches long, ovate-oblong, acute, irregularly sinuated, with large acute teeth and round sinuses, the sides of the base extending unequally down the petiole. Flowers single, axillary, on short stalks, erect or nodding. Calyx tubular, with 5 angles and 5 teeth, deciduous by breaking off from its base. Corolla funnel-shaped, with a long tube, 5-angled, its limb waved and folded, and terminating in 5 acuminate teeth. Ovary superior, hairy, with the rudiments of spines, ovate; style as long as the stamens; stigma obtuse. Capsule ovate, fleshy, covered with thorns, 4-valved, 4-celled, opening at top. Seeds numerous, reniform, black, attached to a longitudinal receptacle, which occupies the centre of each cell. — Very nearly the same as D. Stramonium, but a larger plant, with deep purple stems and a corolla stained at the angles with dull deep purple. Properties the same as those of D. Stramonium.

1069. D. Stramonium *Linn. sp.* 255. *Eng. Bot.* t. 1288. *Woodv.* t. 124. *Smith Eng. Fl.* i. 314. — Waste places all over Europe. (Thornapple.)

A bushy, smooth, fœtid annual, 2 or 3 feet high. Stem much branched, forked, spreading, leafy. Leaves from the forks of the stem, large, ovate, smooth, unequal at the base, variously and acutely sinuated and toothed, veiny, of a light dull green. Flowers axillary, erect, white, sweet-scented, especially at night, about 3 inches long. Fruit as large as a walnut, very prickly. Seeds black. — A violent narcotic poison when taken internally, acting fatally if taken in large doses. In skilful hands it is a valuable medicine in mania, epilepsy, convulsions, tic doloureux, &c. It palliates the distressing paroxysms of pure spasmodic asthma when smoked; for which purpose Bigelow recommends the leaves in preference to the root, in which it is obvious that he must be right as the plant is an annual. It is also employed successfully as an external application as an anodyne and sedative, in burns, hæmorrhoids, irritable ulcers, &c.

1070. D. ferox *Linn.* has similar properties.

PHYSALIS.

Calyx 5-toothed. Corolla campanulate-rotate, plaited, 5-lobed. Anthers converging, opening longitudinally. Stigma capitate.

Berry smooth, 2-celled, covered with the angular membranous inflated calyx.

1071. P. somnifera *Linn. sp. pl.* 261. *Cav. ic.* ii. t. 103. *Fl. Græc.* t. 233. — P. flexuosa *Linn. sp. pl.* 261. *Jacq. ecl.* t. 23. *Roxb. fl. ind.* i. — (*Rheede* iv. t. 55.) — Rocky places on the seacoast of the South of Europe and the East Indies.

Stems several, erect, shrubby, branched and forked, round, downy. Leaves in lateral pairs, short-stalked, ovate, a little scolloped, downy, from 2 to 4 inches long. Flowers axillary, subsessile, crowded, small, greenish-yellow, or whitish. Calyx ovate-pyramidal, greenish-yellow or reddish. Corolla campanulate. Berry red, smooth, size of a pea.— This plant is thought to have been the Στρυχνος ὑπνωτικος of Dioscorides. It is reputed to be narcotic, diuretic, and alexipharmic. The leaves steeped in oil are, in India, applied to inflammatory tumours; and they are used in a similar way in Egypt. Kunth recognised this plant in Egyptian mummies.

1072. P. Alkekengi *Linn.* (The winter Cherry) is diuretic and employed in veterinary practice.

1073. Nicandra physalodes *Gærtn.* (Atropa physalodes *Linn.*) is also said to be diuretic.

SOLANUM.

Calyx permanent, 5–10-parted. Corolla rotate, in 4, 5, or 6 divisions. Anthers 4–6, converging into a cone, opening by pores at the apex. Fruit succulent 2–6-celled.

1074. S. nigrum *Linn. sp. pl.* 266. *Eng. Bot.* t. 566. *Woodv.* t. 226. *Smith Eng. Fl.* i. 318. — Waste places all over the world.

Root fibrous. Herb fœtid, narcotic, bushy, with numerous, angular, or winged, leafy branches. Leaves undivided, lengthened out at the base, smooth. Umbels from the intermediate spaces between the leaves, solitary, stalked, simple, downy. Flowers white, with a musky scent. Berries globular, black; sometimes as it is reported yellow. — A grain or two of the dried leaf have sometimes been given to promote various secretions, possibly by exciting a great, and rather dangerous, agitation in the viscera. *Smith.* It is a narcotic, and according to Orfila, its extract possesses nearly the same power as Lettuce-opium. In Brazil it is called *Carachichu*, or *Erva Moira;* and when bruised is applied either in poultices or baths to painful wounds; and in generally inflammatory cases with a predominant excitement of the nervous system. *Martius.*

1075. S. Dulcamara *Linn. sp. pl.* 264. *Eng. Bot.* t. 365. *Woodv.* t. 33. *Smith Eng. Fl.* i. 318. — In temperate countries in Europe, Asia, and America. (Bitter-sweet.)

Root woody. Stem shrubby, twining, branched, rising when supported to the height of many feet. Leaves acute, generally smooth; the lower ones ovate, or heart-shaped; upper more or less perfectly halberd-shaped; all entire at the margin. Clusters either opposite to

the leaves or terminal, drooping, spreading, smooth, alternately subdivided, and resembling cymes, though not really such. Bracteas minute. Flowers elegant, purple, with 2 round green spots at the base of each segment; they are reported to vary occasionally to white or flesh colour, the spots being also sometimes white. Berries oval, scarlet, juicy, bitter and poisonous. — The root and young branches, in the form of a decoction, much diluted with milk, have been recommended in scrophulous or glandular obstructions. *Smith.* The plant is a dangerous narcotic, and its gay tempting berries have occasionally caused serious accidents among children and others who have eaten them. In medicine the plant has been considered serviceable both internally, and used as a wash in lepra, psoriasis, and other cutaneous disorders. It is diaphoretic, and is said to have been advantageously exhibited in asthma.

1076. S. Jacquini *Willd.* is considered by the native practitioners in India as an expectorant.

1077. S. bahamense *Linn.* Its juice is administered in the West Indies in cases of sore throat, in the form of a gargle.

1078. S. mammosum *Linn.* is said to be bitter and a valuable diuretic.

1079. S. paniculatum *Linn. sp.* 267. *Dunal. solan.* p. 206. *R. and S.* iv. 637. — Brazil.

A shrub. Stem and leafstalks covered with white fur, and armed with straight, scattered, naked prickles. Leaves broad, cordate, deeply sinuated, angular, rather acute, unarmed, smooth on the upper side. Flowers in compound, terminal, unarmed, tomentose panicles. Flowers bluish white.—This plant is called *Juripeba* in Brazil, where the juice of the bruised leaves and unripe fruit is much esteemed, as a powerful remedy in obstructions of the bowels, especially of the liver, and in catarrhus vesicæ. Several other kinds of Solanum are used in similar diseases. When applied fresh, they generally act very favourably in cleansing and healing wounds and ulcers. *Martius.*

1080. S. cernuum *Vellozo MSS.* — Brazil.

Apparently a tree. Branches stout, round, covered over with a remarkably coarse, ramentaceous hairiness. Leaves unarmed, oblong, entire, repand, tapering a little to the base, smooth above, closely covered with white tomentum on the under side, where it is coarsely veined; petioles ramentaceous. Flowers in dense cernuous clusters, with the pedicels and calyxes covered all over with a long loose shaggy coating of the same coarse ramentaceous hairs as those of the stem. — A very remarkable plant, of which I possess a specimen marked "S. cernuum Vellozii," by Von Martius himself: it is not very uncommon in collections of dried plants from the vicinity of Rio Janeiro. We are told that a decoction of the flowers and leaves is a powerful sudorific, and is very serviceable in syphilis, inveterate gonorrhœa and similar complaints. *Martius Travels.*

*** A spinose species of Solanum called *Burabara*, is reported in Demerara to be an antidote to the bite of the rattle-snake.

NICOTIANA.

Calyx tubular, 5-cleft. Corolla funnel-shaped or hypocrateriform, with a 5-cleft plaited spreading limb. Stamens declinate. Stigma capitate. Capsule 2- (or many-) celled, 2-valved, opening by 4 points.

1081. N. Tabacum *Linn. sp. pl.* 258. *Woodv.* t. 60. *S. and C.* t. 37. *Bigelow med. bot.* ii. t. 40. *R. and S.* iv. 315. *Lehm. nicot.* No. 4. — N. macrophylla *Lehm. nicot.* No. 3. N. latissima *Mill. dict.* No. 1. — Hotter parts of America. (Common Tobacco.)

Root long, fibrous. Stem 5 or 6 feet high, erect, round, hairy, and viscid, branching at top. Leaves sessile, very large, ovate or lanceolate, acuminate, viscid, pale green. Bracts linear, acute. Flowers panicled on the ends of the stem and branches. Calyx swelling, hairy, glutinous, half as long as the corolla, ending in 5 acute segments. Corolla funnel-shaped, swelling toward the top, the border dull red, expanding, with 5 acute lobes. Filaments inclined to one side, with oblong anthers. Ovary ovate, style long and slender, stigma cloven. Capsule ovate, invested with the calyx, 2-celled, 2-valved, but opening crosswise at top, loculicidal. Seeds very numerous, small, somewhat reniform, attached to a fleshy receptacle. — This species yields the Virginian, Havannah, and pigtail tobaccos of the shops, and probably the principal part of that which comes from India in the form of cheroots. It is a powerful stimulant narcotic, employed medicinally as an errhine, in infusion as an expectorant and sedative, and in vapour both as an antispasmodic and to bring on nausea and fainting. Tobacco enemata have been found useful in relaxing the parts implicated in strangulated hernia, but the remedy is dangerous. When chewed it appears to act deleteriously, impairing the appetite and bringing on torpor of the gastric nerves. Although if smoked in moderate quantities it acts as a harmless excitant and sedative, yet it is a frequent cause of paralysis when the practice is indulged in to excess. Oil of Tobacco, which is inhaled and swallowed in the process of smoking is one of the most violent of known poisons. The Hottentots are said to kill snakes by putting a drop of it on their tongues, and the death of these reptiles is said to take place as instantaneously as if by an electric shock; dangerous symptoms are reported to have followed the application of the ointment to scald heads.

The whole genus probably participates in the same qualities; the following only need be particularly noticed.

1082. N. rustica *Linn. sp. pl.* 258. *Lehm. nicot.* 13. *Plenck offic. pl.* t. 100. — South of Europe, Levant, Africa and America.

An annual. Stem round, erect, 2–3 feet high, covered with fetid glutinous hairs. Leaves stalked, roundish ovate, entire, sometimes rather cordate. Flowers green. Tube of the corolla cylindrical, longer than the calyx; limb rather concave, with rounded obtuse segments. — Syrian and Turkish Tobaccos are prepared from this species, which is much more mild in its operation than the last.

1083. N. persica *Lindl. Bot. Reg.* t. 1592. — Persia.

A viscid, downy, branching annual. Radical leaves oblong-spathulate, cauline sessile, half amplexicaul, acuminate. Calyxes acutely 5-cleft; flowers white, sweet-scented; tube of the corolla hypocrateriform, slender, clavate; throat ventricose; segments of the limb ovate, emarginate, somewhat unequal. — Produces the delicate and fragrant Tobacco of Shiraz.

CRESCENTIA.

Calyx 2-leaved, equal, deciduous. Corolla campanulate, with a fleshy tube much shorter than the ventricose, 5-cleft, unequal, crisped limb. Stamens 4, didynamous, with the rudiment of a fifth. Fruit gourd-like, 1-celled, with a solid shell, internally pulpy, many-seeded.

1084. C. Cujete *Linn. sp. pl.* 872. *Jacq. amer.* 175. t. 111. *Bot. Mag.* t. 3430. — West India islands, and Spanish Main. (Calabash tree.)

A tree, according to Jacquin, 20 feet in height, readily distinguished from all others by its peculiar habit: for it sends out large, horizontal, scarcely divided branches, which bear fascicles of leaves at various distances. These leaves are from 4 to 6 inches in length, broadly lanceolate, somewhat acute, entire, tapering at the base, but destitute of petiole. Peduncles, in general from the older portions of the trunk, or branches, solitary, rarely 2 or 3 together, decurved, bearing a single, pendent flower of a large size, and, though varying somewhat in colour, generally of a yellowish-green, more or less streaked, or veined with reddish lines. The calyx is large, of 2 roundish, or oval, green, concave lobes. Corolla large, somewhat campanulate, with a remarkable constriction below the middle, above which it becomes ventricose, and at the mouth cut into 5, much crisped and waved, sharp, but rather unequal segments, which are at length reflexed: it does not readily fall away, but decays upon the peduncle, and then gives out a very disagreeable smell. Stamens 4, didynamous, sometimes 5, shorter than the corolla. Anthers of 2 oblong lobes, spreading at their base. Ovary ovate, surrounded by a large, fleshy, yellowish ring. Style rather longer than the corolla: stigma 2-lobed. Fruit, according to authors, an oval or round berry, large, externally coriaceous, 1-celled, containing a copious pulp, in which are imbedded several cordate, compressed seeds, which are said to have 2 cells. *Hooker.* — From the pulp of the fruit, a syrup is prepared in the West Indies having a great reputation as a pectoral medicine, and as a remedy for internal bruises. Dr. Wright recommends the pulp as an excellent poultice for bruises and inflammations.

CESTRACEÆ.

Nat. syst. ed. 2. p. 296.

CESTRUM.

Calyx tubular, terete, very short, obsoletely 5-toothed. Corolla funnel-shaped, with a long slender cylindrical tube, a roundish throat, and a flat limb with ovate equal segments. Filaments the length of the tube, anthers enclosed. Berry roundish, 2-celled, many-seeded.

1084. C. venenatum *Thunb. prodr.* 36. *fl. cap.* 193. — Woods at the Cape of Good Hope, in Houtniqua-land and elsewhere.

A large woody bush. Branches roughish, purplish; the young ones furrowed. Leaves opposite, coriaceous, stalked, acuminate, entire, reflexed at the edge, evergreen, ribbed, quite smooth. Flowers subsessile, in axillary clusters. Corolla with a reddish tube, and a white limb, villous on the upper side; the throat being stopped with hair; with the perfume of Jasmine flowers. —A decoction of the bark, reduced to the thickness of jelly is used by the Hottentots to envenom their weapons. It is said to be a fatal poison, and to be also used by the same people to destroy wild beasts, by impregnating baits of flesh with its juice.

1085. C. macrophyllum *Vent. and* 1085 *a*. C. nocturnum *Lam.* have similar properties.

1086. C. Hediunda *Lam.* (Hediunda *Feuill.* ii. t. 20. C. auriculatum *Fl. Peruv.* ii. t. 155. f. a.) and 1087. C. laurifolium *L'Herit.* are febrifugal, and also used externally as astringents. *Martius.*

GENTIANACEÆ.

Nat. syst. ed. 2. *p.* 297.

*** There is scarcely a plant of this natural order in which the bitter principle does not exist in considerable intensity. Although the following are taken as good examples, and as the most officinal species, the list might be very much and usefully extended.

GENTIANA.

Calyx 4–5-parted. Corolla variously divided, twisted to the right in æstivation, often with accessory lobes between the principal ones; without depressed glands upon the petals. Filaments equal at the base; anthers not changing. Stigmas terminal on the ovary or style. Placentæ united with the endocarp, and overspreading the valves of the capsule.

1088. G. Catesbæi *Walter fl. carol.* p. 109. *Elliott bot.* i. 340. *Bigelow med. bot.* ii. t. 34. — Wet grassy meadows in the southern parts of the North American Union.

Root branching, fleshy. Stem simple, erect, rough. Leaves opposite, ovate or lanceolate, slightly 3-nerved, acute, rough on the margin. Flowers crowded, nearly sessile, axillary and terminal. Segments of the calyx linear-lanceolate, varying in length, exceeding the tube and sometimes more than twice its length. Corolla large, blue, ventricose, plaited; its border 10-cleft, the 5 outer segments roundish and more or less acute, the 5 inner bifid and fimbriate. Stamens 5, with dilated filaments and sagittate anthers. Ovary oblong-lanceolate, compressed, supported by a sort of pedicel. Style none; stigmas 2, oblong, reflexed. Capsule oblong, acuminate, 1-celled, 2-valved. *Bigelow.* — Dried root mucilaginous and sweetish, then intensely bitter, approaching nearly to G. lutea. It is considered the best substitute in North America for that species.

1089. G. Amarella *Linn. sp. pl.* 334. *Eng. Bot.* t. 236. *Smith Eng. Fl.* ii. 30. — High, dry chalky pastures in most parts of Europe.

Root tapering, twisted, yellowish. Whole plant intensely bitter. Stem square, erect, leafy, purplish, usually from 6 to 12 inches high, with opposite, axillary, many-flowered, leafy, but rather short, branches, rendering the whole plant panicled, and nearly cylindrical. Leaves dark green, sessile, ovate, 3-ribbed, mostly acute; the lower ones stalked, and rather spathulate. Flowers erect, barely an inch long, with a whitish cylindrical tube, twice as long as the spreading, deeply 5-cleft, acute, purplish-blue limb, which has no intermediate segments, but the mouth of the tube is crowned with a fine erect purplish fringe, rather shorter than the limb, and rising much above the stamens. The calyx has a turbinate, 5-angled, pale-green tube, about as long as

its 5 purplish, lanceolate, acute, erect, smooth-edged segments, which though uniform, are often a little unequal in size, and reach somewhat beyond the middle of the tube of the corolla. The limb of the latter has occasionally but 4, or even 3, segments, and is never fully expanded but in bright sunshine. The stamens answer in number to the divisions of the calyx and corolla, being almost always 5, awl-shaped, with roundish separate anthers. Styles very short. Stigmas ovate. *Smith.* — One of the British substitutes for the Gentian of the shops.

1090. G. campestris *Linn. sp. pl.* 334. *Eng. Bot.* t. 237. *Smith Eng. Fl.* ii. 31. — Elevated pastures in many parts of Europe.

Herb rather paler than the last, and of more humble growth, varying greatly in luxuriance. Stem somewhat corymbose, with simple flower-stalks of various lengths. Leaves ovate, acute, 3-ribbed. Flowers somewhat larger and paler than in G. Amarella, 4-cleft, essentially distinguished by having the two outer and opposite segments of the calyx ovate and very broad, covering the two inner, which are narrow and lanceolate, or even awl-shaped; all deeply separated, and minutely fringed. *Smith.* — A substitute for the officinal Gentian.

1091. G. purpurea *Linn. sp. pl.* 329. *Frölich gent.* No. 2. *Bot. Rep.* t. 117. *R. and S.* vi. 136. *N. and E. pl. med.* t. 202. — Alps of Norway, Switzerland and Savoy, and the Pyrenees.

Root simple and subdivided, many-crowned, taper, thickish, long, yellow outside, white inside, intensely bitter. Stem obscurely 4-cornered, green or greenish-purple, 1–2 feet high. Radical leaves ovate, or ovate-lanceolate, apiculate; those in the middle of the stem ovate-lanceolate, scarcely acuminate; the uppermost sessile, broad-lanceolate, united and sheathing at the base; all 5-nerved, flexible and bright shining green. Flowers terminal and axillary, on short stalks. Calyx oblong, scarious, semitransparent, slit longitudinally on the inner side. Corolla large, rather coriaceous, with a few scattered dots, arranged in rows, in the inside; the tube yellow and striated; the limb 6-cleft, with broad obtuse segments distant at the base. Seeds brown, orbicular, winged. — Employed with the next in continental practice.

1092. G. pannonica *Murr. syst.* 267. *Jacq. austr.* ii. t. 136. *N. and E. pl. med.* t. 200. *Frölich. gent.* p. 21. *R. and S.* vi. 137. — G. punctata *Jacq. obs.* ii. p. 17. t. 89. — Alps of the Tyrol, Bavaria, Carinthia, Styria and Austria.

Root tapering, little branched, many-crowned, rugose, as much as 2 feet long, thick, yellowish brown outside, whitish inside. Stem round, green or purplish, 1–2 feet high. Leaves ovate, somewhat apiculate, 5-nerved, the petioles running down into a sheath; those on the middle of the stem ovate-lanceolate, long; those at the top acuminate, about 3-nerved; all somewhat coriaceous and bright green. Flowers sessile, or on very short stalks (the upper whorl many-flowered), large, 1½ inch long. Calyx campanulate, obsoletely 5-cornered, about 6-cleft, varied with red and green; the segments almost leafy and unequal, divided by a wide sinus, sometimes serrulated, shorter than the tube. Corolla coriaceous, membranous, purple, with a yellowish tube, marked all over into rows of deeper spots; the segments ovate, rather blunt, thrice as short as the tube. Seeds brown, winged,

round. — Used as a substitute for Gentiana lutea in the shops of Bavaria and Austria. The roots are extremely bitter and not inferior to that species.

1093. G. punctata *Linn.* is collected on the Alps of Europe, as well as the two last, in great quantities, and is sold for G. lutea to which it is not inferior in quality.

1094. G. Kurroo *Royle MSS.* — Pneumonanthe Kurroo *Don in Royle's Illustrat.* 278. t. 68. — Mussooree, Simla, and other parts in the Himalayas.

Stems about 1-flowered. Leaves obtuse; the radical long, lanceolate, those on the stems linear. Teeth of the calyx long, subulate. Corolla funnel-shaped, with an intense blue spreading 10-lobed limb, the principal lobes of which are ovate and acute, the intermediate ones scale-like teeth. — The root is used like Gentian in the north of India.

1095. G. lutea *Linn. sp. pl.* 335. *Frölich. gent.* p. 15. *N. and E. pl. med.* t. 199. *Mill. ic.* t. 139. *R. and S.* vi. 136. — Alpine meadows in the middle of Europe. (Common Gentian.)

Root cylindrical, wrinkled, ringed, thick, forked, brown externally, yellow within. Stem 3 or 4 feet high, hollow, and stout. Radical leaves ovate-oblong, 5-nerved, 2 or 3 inches broad; those on the stem sessile, ovate, acute; those next the flowers cordate, amplexicaul, concave; all a pale bright green. Flowers bright yellow, in many-flowered whorls, stalked. Calyx of a papery texture, and semi-transparent, 3- or 4-cleft, with short lanceolate unequal segments. Corolla with a very short tube, and 5–6 green glands at the base, 5–6-parted, with oblong, acute, veiny lobes. Anthers subulate, somewhat united, becoming distinct. Stigmas revolute. Capsule oblong, stalked. Seeds roundish, compressed, with a membranous brownish border. — The root of this species furnishes the Gentian of the shops, a valuable bitter drug, employed extensively in certain forms of dyspepsia, in intermittents, and as an anthelmintic. In full doses it is apt to relax the bowels, and it does not always agree with the stomach; in fact it possesses a volatile principle capable of producing nausea and a kind of intoxication. The root contains a good deal of sugar and mucilage which enables the Swiss to prepare from it a liqueur held in high esteem among that people.

AGATHOTES.

Corolla withering, rotate, in æstivation twisted to the right; with glandular hollows protected by a fringed scale upon the segments. Anthers not changing. Stigmas sessile. Capsule conical, 1-celled, with spongy placentæ upon the sutures. Seeds indefinite, minute.

1096. A. Chirayta *Don in Lond. Phil. Mag.* 1836. p. 76. — Gentiana Chirayta *Fleming in As. research.* xi. 167. *Roxb. fl. ind* ii. 71. — Nepal and the north of India.

An annual. Stems single, straight, round, smooth, jointed; branches generally decussated, nearly erect, with their extremities somewhat angular; the whole height of the plant about 3 feet, Leaves opposite, amplexicaul, lanceolate, very acute, entire, smooth, 3- or 5-nerved. Flowers very numerous, stalked, the whole upper half of the plant

forming an elegant, oblong, leafy, decussated panicle. Bractes 2 at each division of the panicle, and like the leaves, but smaller. Calyx 4-cleft; divisions linear, acute, permanent. Corolla yellow; the limb spreading and 4-parted, with divisions as long as those of the calyx, and also permanent. Stamens 4. Anthers cloven at the base. Style single, as long as the ovary. Stigma large, 2-lobed. Capsules rather shorter than the permanent calyx and corolla, 1-celled, 2-valved, opening a little at the apex. Seeds numerous, affixed to 2 receptacles adhering to the sides of the valves. — An excellent tonic bitter. The whole plant is pulled up at the time the flowers begin to decay, and dried for use. Its febrifugal properties are in high estimation with European practitioners in India, who use it instead of Cinchona when the latter is not to be procured. Professor Royle has shown that the common notion of this being the *Calamus aromaticus* of the ancients is unfounded; see his *Illustrations, &c.* p. 278.

FRAZERA.

Calyx deeply 4-parted. Corolla 4-parted, rotate, deciduous, with a bearded orbicular gland in the middle of each segment. Stamens 4. Capsule compressed, partly margined, 1-celled. Seeds few, imbricated, elliptical, with a membranous margin.

1097. F. carolinensis *Walt. car.* 87. *Torrey fl.* i. 187. — F. Walteri *Michx. fl.* i. 97. *Elliott sketch* i. 205. *Bart. veg. mat. med.* ii. 35. — Borders of lakes in the middle and southern states of the North American Union.

Root biennial. Stem 3–5 feet high, erect, sub-quadrangular, smooth. Leaves opposite and verticillate, oblong-lanceolate; the lower ones a foot long, and more than 3 inches broad. Flowers verticillate; peduncles 1-flowered, unequal. Segments of the calyx linear-lanceolate, acute. Corolla greenish-yellow, speckled with purple; segments acuminate, with an oval or orbicular fringed gland in the centre of each. Stamens shorter than the corolla, alternating with its segments; filaments subulate; anthers large, oblong, yellow. Ovary oblong, attenuated into a short style; stigma bifid. Capsule much compressed, oval, acuminated with the persistent style. Seeds 6–8. *Torrey.* — The root is a pure, powerful, and excellent bitter, destitute of aroma, and is fully equal to Gentian. When fresh it is reported to be emetic and cathartic. The roots have been imported into Europe as a sort of Calumba, and have acquired in consequence the name of *American Calumba.*

CICENDIA.

Corolla funnel-shaped; without glands or any corona, with a 5-parted limb, eventually twisted over the capsule. Stamens 5. Stigma capitate. Capsule 1-celled, with the valves so much inflected as to divide the cavity almost into 2 cells. Anthers not altering.

1098. C. hyssopifolia *Wight and Arnott in Comp. to Bot. Mag.* ii. 250. t. 28. — Gentiana hyssopifolia *Linn. suppl.* 174. *Burm. afr.* t. 74. f. 3. Exacum hyssopifolium *Willd. sp. pl.* i. 640. — Various parts of the East Indies, common.

Annual. Stems herbaceous, 4-sided, glabrous, the angles slightly winged: branches few, opposite, diffuse. Leaves opposite, decussate, linear-lanceolate, tapering at the base, and embracing the stem with the short petioles, smooth, 3-nerved, much paler below. Flowers 6 or 8 together, in axillary whorls, sessile, white, each furnished with a linear spathulate bractea. Calyx 5-cleft, divisions acute, margined, reflexed at the point, permanent, and closely embracing the base of the mature capsule. Corolla tubular, 5-cleft; divisions obtuse, spreading, oblique at the base. After withering, the corolla remains closely investing the capsule until it bursts. Stamens 5; filaments attached to the middle of the tube, and furnished at the base with a small projection which rests on the stigma, and closes the tube. Anthers linear-oblong, erect, subsagittate, 2-celled. Ovary superior; style short; stigma capitate. Capsule 2-valved, 1-celled, the margins inflexed, and bearing the numerous, small, round, brownish seeds. *W. and A.* — The whole plant is somewhat bitter, though much less so than many of its natural allies. Like them it is employed by the natives of India as a stomachic, and is administered in decoction or powder. Thus used it is also said to act as a laxative. *Wight.*

ERYTHRÆA.

Calyx 5-parted, equal. Corolla hypocrateriform with a cylindrical tube, withering over the capsule. Stamens 5; anthers becoming spiral. Stigmas bilamellate. Capsule 1-celled or half 2-celled.

1099. E. Centaurium *Pers. syn.* i. 283. *Smith Eng. Fl.* i. 320. — Chironia Centaurium *Eng. Bot.* t. 417. *Woodv.* t. 157. Gentiana Centaurium *Linn. sp.* 332. — Dry gravelly pastures in Europe.

Root small, tapering. Stem about a foot high, leafy, sometimes branched at the upper part, and, when very luxuriant, from the base also. Radical leaves obovate, numerous, depressed; the rest acute, ovate, or elliptic-lanceolate; all 3-ribbed, bright green. Flowers nearly sessile, from the forks and terminations of a corymbose, more or less dense, repeatedly subdivided, leafy or bracteated, panicle. Bracteas opposite, awl-shaped. Calyx slender, partly membranous, sometimes more than half as long as the pale greenish tube of the corolla, whose limb is of a most exquisite and brilliant pink, rarely white; expanded only in sunshine, and closing as soon as gathered. Anthers yellow, spiral, with 3 convolutions, after bursting. Style rather oblique, if not curved or deflexed. Capsule slender, brown, invested closely with the permanent dilated tube of the corolla. *Smith.* — This wild plant possesses all the essential properties of the gentian of the shops, and although not used professionally is a very valuable native medicine. In the places where it grows it is carefully collected for use in rustic pharmacy.

CHLORA.

Sepals 8. Corolla rotate, with 6–8 segments withering round the capsule. Stigma bilamellate. Anthers not altering. Capsule 1-celled, with spongy placentæ. Seeds angular.

1100. C. perfoliata *Linn. syst. nat.* ed. 12. ii. 267. *Eng. Bot.*

t. 60. *Smith Eng. Fl.* ii. 218. — Gentiana perfoliata *Linn. sp. pl.* 335. — Chalky hills and banks in various parts of Europe.

Root of a few twisted fibres. Stem 12 or 18 inches high, erect, round, leafy, unbranched, terminating in an upright, leafy, repeatedly forked panicle, of many elegant, bright yellow, scentless flowers, open in sunshine only, with scarlet stigmas. Leaves ovate, acute, combined and perfoliate. The whole herb is very glaucous, subject to mildew. — Its qualities similar to those of Gentiana and Erythræa, but weaker. *Smith.*

SABBATIA.

Calyx 5–12-parted. Corolla rotate, 5–12-parted, withering on the capsule. Anthers at length revolute. Stigma with 2 arms which become spirally twisted. Capsule 1-celled, with the valves a little turned inwards.

1101. S. angularis *Pursh. fl. am. sept.* i. 137. *Elliott. Bot.* i. 285. *Bigelow. med. bot.* iii. t. 57. *Torrey fl.* i. 218. — Chironia angularis *Mich. fl. am. bor.* i. 146. — Damp rich soils in the United States. Common in moist meadows, among high grass.

Height from 1 to 2 feet. Stem erect, smooth, square, with the angles winged. Branches axillary, opposite. Leaves opposite, ovate, but variable in length and width, heart-shaped at base, clasping half the stem, 5-nerved, smooth, acute. Flowers terminal, forming a large corymb. Tube of the calyx angular, with 5 broad segments. Corolla 5-parted with oval segments twice as long as the calyx. Anthers oblong, and slightly recurved at the time when the flower first opens. After shedding their pollen they become revolute and curl up. Ovary ovate; style longer than the stamens, declined; stigma 2-parted, the segments separate at first, but gradually becoming twisted spirally together. Capsule 1-celled, 2-valved. — One of the most pure and simple bitters. Extensively employed in North America in both intermittent and remittent fevers.

S. gracilis *Pursh.* and others are said by Bigelow to be equally efficacious.

LISIANTHUS.

Calyx campanulate, 5-cleft; the segments erect, thinner and more membranous at the edges. Corolla funnel-shaped, the tube unequal or ventricose on one side; limb 5-cleft, naked at the throat, withering. Anthers generally revolute when dry. Stigma bilamellate. Capsule 2-valved; the edges of the valves bearing the placentæ and inflexed; 2-celled, many-seeded. *Martius.*

1102. L. pendulus *Martius n. g. and sp.* ii. 94. t. 172. — Subalpine mountains of Brazil, near Villa Rica and S. Joâo d'el Rey in the province of the mines.

An annual. Stem simple, erect, 1½ foot high or more, square at the bottom, round at the top. Leaves in 4, 5, or 6 pairs, oblong, rather acute, the lowest the shortest, and somewhat decurrent, with 3–5 vanishing ribs. Flowers 2 or 3, terminal, on long graceful nodding

peduncles. Corolla 1½ inch long, of a beautiful pale violet colour, with acute segments. — The Brazilians make use of the root, which is extremely bitter, in decoction, as a febrifuge. *Martius.*

CUTUBEA.

Calyx campanulate, 4-parted. Corolla hypocrateriform; tube cylindrical, equal; throat naked; limb 4-parted. Stamens projecting; filaments bidentate at the base; anthers sagittate, not changing when dry. Stigma bilamellate. Capsule 2-celled, 2-valved, many-seeded. *Martius.*

1103. C. spicata *Aubl. guian.* i. 72. t. 27. — Exacum spicatum *Vahl. symb.* iii. 17. Contoubea alba *Lam. dict.* ii. 162. — Common in Guiana by roadsides and on the banks of rivers and water courses.

An annual, growing about 3 feet high, with an obtusely quadrangular stem. Leaves somewhat fleshy, sessile, smooth, glaucous, lanceolate, whorled. Flowers spiked, axillary and terminal; those lowest in the spike opposite each other, the upper ones alternate; all sessile. Corolla white. — The whole plant is very bitter. It is employed successfully in promoting the menstrual discharge, in various stomach-complaints, in visceral obstructions and as an anthelmintic. *Aublet.*

1104. Cutubea ramosa *Aubl.* is used like the last.

MENYANTHES.

Calyx 5-parted. Corolla funnel-shaped, with an induplicate æstivation; the limb spreading, 5-lobed, equal, stupose. Stigma capitate, furrowed. Capsule 1-celled, 2-valved, with the placentæ in the middle of the valves.

1105. M. trifoliata *Linn. sp. pl.* 207. *Fl. Lond.* t. 17. *Fl. Dan.* t. 541. *Woodv.* t. 2. *Eng. Bot.* t. 495. *Bigel. med. bot.* iii. t. 46. — Common in spongy boggy soils in Europe and North America. (Buckbean.)

Rhizoma penetrating horizontally in the bog-earth to a great distance, regularly intersected with joints at the distance of about half an inch from each other; these joints are formed by the breaking off of the old petioles and their sheaths. The leaves proceed from the end of the rhizoma on long stalks furnished with broad sheathing stipules at base; they are trifoliate, nearly oval, glabrous, somewhat fleshy, and slightly repand, or furnished with many irregularities at the edge, which hardly prevent them from being entire. Scape round, ascending, smooth, bearing a conical raceme of flowers. Peduncles straight, supported by ovate concave bractes. Calyx erect, somewhat campanulate, 5-parted, persistent. Corolla white; its tube short, border 5-cleft, spreading and at length revolute, clothed on the upper part with a coating of dense, fleshy, obtuse hairs. Stamens 5, shorter than the corolla, and alternate with its segments; anthers oblong-arrow-shaped. Ovary ovate; stigma bifid, compressed. Capsule ovate, 2-valved, 1-celled. Seeds numerous, minute. — All the plant, the root especially, intensely bitter. Reckoned one of the most valuable of tonics. Large doses produce vomiting,

purging, and frequently powerful diaphoresis. Recommended in intermittent and remittent fevers, gout, herpetic complaints, rheumatism, dropsy, scurvy, and worms.

VILLARSIA.

Calyx 5-parted. Corolla rotate, 5-lobed; the limb stupose at the base, with the margins inflected. Glands 5, alternating with the stamens. Stigma 2-lobed. Capsule 2-valved, with the valves half bifid. Placentæ in the suture.

1106. Villarsia nymphæoides *Vent. choix.* 9. — Menyanthes nymphæoides *Linn. sp. pl.* 207. *Eng. Bot.* t. 217. *Smith Eng. Fl.* i. 275. — In bogs upon the banks of large streams in many parts of Europe.

Rhizoma long and stringy. Stems several feet long, round, branching, floating by means of their roundish-heart-shaped, very smooth leaves, which are mottled above, purplish beneath; involute in the bud, as in Nymphæa and Nuphar. Flowers axillary, on simple aggregate stalks, without bracteas. Corolla 1½ inch wide, spreading, yellow, with a dark radiating disk. Ovary with 5 purplish glands at the base. Stigma notched, deciduous. Capsule ovate, compressed. — Stems are bitter, tonic, and febrifugal.

SPIGELIA.

Nat. syst. ed. 2. *p.* 298.

Calyx 5-parted. Corolla funnel-shaped, with a 5-cleft equal limb. Anthers converging. Capsule didynamous, 2-celled, 4-valved, many-seeded.

1107. S. marilandica *Linn. syst. veg.* 197. *Bot. Mag.* t. 80. *Woodv. med. bot.* ii. t. 105. *Bigelow med. Bot.* i. t. 14. *Torrey fl.* i. 222. — Lonicera marilandica *Linn. sp. pl.* ed. 3. p. 249. — Rich soils about the borders of woods in the southern states of N. America. (Carolina Pink root; Wormseed.)

Root perennial, fibrous. Stems simple, 4-sided, and nearly smooth. Leaves opposite, sessile, ovate, acuminate, entire, smooth, with the margins and veins sometimes pubescent. Raceme terminal, usually solitary. Peduncles extremely short. Calyx persistent, with 5 linear-subulate, finely serrulate divisions, which are reflexed in the ripe fruit. Corolla funnel-shaped, 5 times as long as the calyx, scarlet or crimson without, orange-coloured within, the tube inflated and angular at top, the limb divided into 5 acute, spreading segments. Stamens very short, inserted into the mouth of the corolla between the segments; anthers oblong-heart-shaped. Ovary small, superior, ovate. Style longer than the corolla, jointed near its base and bearded at the extremity. Capsule consisting of 2, cohering, 1-celled, globular carpels attached to a common receptacle. — Both root and leaves are active anthelmintics; their efficacy is much impaired by keeping. Also purgative and narcotic

in a slight degree. It appears to be an acrid narcotic, and is apt to produce very unpleasant symptoms after being exhibited; dimness of sight, giddiness, dilated pupil, spasms of the muscles of the eyes, and even convulsions are reported by Barton to have been brought on by it.

OROBANCHACEÆ.

Nat. syst. ed. 2. *p.* 287.

Sepals 2, lateral, undivided or cloven, permanent. Corolla ringent, withering; upper lip concave, notched, lower reflexed, in 3 unequal wavy lobes. A gland under the ovary. Anthers sagittate, with the lobes pointed at the base; filaments almost as long as the tube of the corolla, downy and glandular. Capsule ovate, pointed, with 4 parietal parallel placentæ.

1108. O. major *Linn. sp. pl.* 882. *Eng. Bot.* t. 421. *Smith Eng. Fl.* iii. 146. — On barren soil, parasitical upon the roots of broom or furze. (Broomrape.)

Root of a few fibres. Stem about a foot high, erect, dusky, unbranched, angular, hollow, fleshy, clothed, like every other part, with short, rough, glandular pubescence, and beset with scattered, lanceolate, upright scales, in the place of leaves; the base tumid, ovate, clothed with smaller, more abundant scales. Spike terminal, simple, rather dense, of from 15 to about 20 flowers, of a dull purplish brown, without any scent, and after a while turning entirely brown, dry and membranous. Bracts solitary under each flower, lanceolate, acute, rusty and downy. Sepals deeply cloven. Upper lip of the corolla large, sometimes slightly cloven, often entire and rather pointed, lower in 3 acute, nearly equal, wavy, sometimes crenate lobes. Filaments dilated and channelled, as well as perfectly smooth, in their lower half; glandular and downy at the summit. Anthers smooth, brown. Ovary downy all over as well as the style. Stigma of 2 large, distant, globular, yellow lobes. *Smith.* — A powerful astringent, bitter plant, the infusion of which has been employed as a detergent application to foul sores, and nternally to restrain alvine fluxes.

EPIPHEGUS.

Perfect flowers sterile; imperfect fertile. Calyx short, short, 4-toothed. Perfect corolla 2-lipped; the upper lip emarginate, the lower 3-toothed; imperfect corolla slender, 4-toothed, deciduous. Stamens as long as the corolla; filaments smooth: anthers 2-lobed, acute at the base, valveless, dehiscent in the middle. Stigma capitate, somewhat emarginate. Capsule gibbous, compressed, half 2-valved, with 4 diverging placentæ.

1109. E. virginiana *Nutt. gen. am. pl.* ii. 60. — Orobanche virginiana *Linn. sp. pl.* 882. *Elliott sketch.* ii. 136. — Parasitic

upon the roots of beech trees in the southern states of the American Union.

A smooth, fleshy, branching parasite, growing from 6 to 18 inches high, and clothed with small scales in lieu of leaves. Flowers alternate, distant, nearly sessile, the lower perfect, the upper usually imperfect and abortive. Calyx short, 4-toothed. Corolla white streaked with purple. Capsule dilating after it opens, very much in shape of a cup. —Michaux says that in Virginia the powdered stems are frequently sprinkled over inveterate ulcers, and open cancers, with considerable benefit. A quack medicine known in N. America by the name of "Martin's Cancer powder," is said to be a compound of this plant and white arsenic.

APOCYNACEÆ.

Nat. syst. ed. 2. p. 299.

** Fruit drupaceous.*

CERBERA.

Calyx permanent, 5-parted, leafy. Corolla hypocrateriform; tube clavate; throat 5-angled, with 5 scales; limb 5-parted, contorted. Stamens 5, short, in the middle of the tube. Drupe with a hard, woody, fibrous, 1–2-seeded putamen.

1110. C. Tanghin *Hooker in Bot. Mag.* t. 2968. — Tanghinia *Thouars. gen. nov. mad.* p. 10. Tanghinia venenifera *Poiret in encycl. suppl.* v. 283. — Madagascar. (Voa Tanghin.)

This constitutes a tree in its native climate, having crowded or clustered leaves and erect branches. The leaves are from 4 to 6 and 8 or 10 inches long, lanceolate, tapering at the base, subcoriaceous, quite entire. Flowers in large terminal panicles, with white flowers, having a tinge of rose-colour on the outside, and a deeper red circle round the mouth. Calyx 5-fid, patent. Corolla longer than the calyx, funnel-shaped, dilated upwards, the limb plain, contorted, 5-lobed. Stamens 5; anthers sessile, inserted into the dilated part of the tube, heart-shaped, having a tubercle under each. Ovary double. Style single. Stigma capitate, with 2 tubercles at the point, included within the anthers. Drupes 2, or by abortion solitary, pyriform, acuminated. Nut filamentous, woody. Albumen none. Cotyledons long, thick, concave. *Thouars.* — The kernel of the fruit a deadly poison; although not larger than an almond it is sufficient to destroy 20 people. It was used in Madagascar as an ordeal, but the practice is now discontinued. N.B. It is very doubtful whether this is different from the next species.

1111. C. Manghas *Linn. sp. pl.* 303. *Lam. encycl.* i. 61. *Gærtn. de fruct.* ii. t. 123. 124. (*Burm. zeylan.* 150. t. 70. f. 1. *Rumph.* ii. t. 81.) — A common plant in wet situations in the East Indies.

Leaves broad-lanceolate, stalked, smooth, entire, clustered at the ends of the branches. Racemes terminal, branched, unequal. Calyx with lanceolate, coloured, deciduous leaves. Corolla white, with a tube longer than the calyx, and a limb shorter than the tube. Anthers ovate, quadrangular, covered by the wool of the tube. Drupe as large as a goose's egg, ovate, green, marked with numerous white points, compressed. Seeds 2, as large as chesnuts. — The kernels are emetic and poisonous; the milky sap is employed as a purgative. According to Waiz the leaves and bark are so similar to Senna in their action that they are substituted for it in Java.

1112. C. Ahovai *Linn.* has also very poisonous seeds. The bark and sap are emetic and narcotic.

1113. C. Thevetia *Linn.* has a dangerous venomous milk. The bark is bitter and cathartic, and is reported to be a powerful febrifuge, 2 grains only being affirmed to be equal to an ordinary dose of cinchona.

STRYCHNOS.

Calyx 4–5-parted. Corolla tubular, with a spreading 4–5-cleft limb, and a valvate æstivation. Stamens 4–5, inserted into the throat of the corolla, which is either naked or bearded. Ovary 2-celled, with indefinite ovules attached to a central placenta; style 1; stigma capitate. Berry corticated, 1-celled, many-seeded, or by abortion 1-seeded. Seeds nidulant, discoidal. Albumen large, cartilaginous, almost divided into 2 plates. Embryo with leafy cotyledons.

1114. S. Nux vomica *Linn. fl. zeyl.* 91. *Roxb. corom.* i. 8. t. 4. *fl. ind.* i. 575. (*Rheede* i. t. 37.) — Coromandel, Ceylon, and elsewhere in the East Indies. (Kuchila in Bengal.)

Trunk short, often crooked, but pretty thick. Branches irregular, covered with smooth ash-coloured bark; young shoots highly polished, deep green. Wood white, hard, close-grained, and bitter. Leaves opposite, short-stalked, oval, shining, smooth on both sides, from 3 to 5 nerved, or rather between that and triple, or quintuple, differing in size from 1½ to 4 inches long, and from 1 to 3 broad. Flowers small, greenish-white, collected in small terminal corymbs. Calyx 5-toothed, permanent. Filaments scarcely any, or exceedingly short, inserted over the bottom of the divisions of the corolla; anthers oblong, half within the tube, and half out. Ovary 2-celled, with many ovules in each cell, attached to the thickened centre of the partition. Style the length of the tube of the corolla; stigma capitate. Berry round, smooth, size of a pretty large apple, covered with a smooth, somewhat hard shell, of a rich beautiful orange colour when ripe; filled with a white, soft, gelatinous pulp. Seeds several, immersed in the pulp of the berry. — The wood is exceedingly bitter, particularly that of the root, which is used to cure intermittent fevers, and the bites of venomous snakes. The seeds are employed in the distillation of country spirits, to render them more intoxicating. The pulp of the fruit seems perfectly innocent, as it is greedily eaten by many sorts of birds. *Roxb.* — The seeds are extremely poisonous, in large doses producing extraordinary rigidity and convulsive contraction of the muscles previous to death. In very small and repeated doses it promotes the appetite, assists the digestive process, increases the secretion of urine, and sometimes acts slightly upon the bowels. It is employed medicinally in paralysis, dyspepsia, dysentery, affections of the nervous system, &c.; and appears to be very active in removing impotence. It appears however that virility is preserved no longer than the use of the drug is persevered in. See Mr. Pereira's excellent account of the action of Nux Vomica, in the *Med. Gaz.* xix. 440. The bark of this plant has been sold in Europe as a sort of Angustura bark, and obtained the name of *false Angustura*. It was at one time assigned to *Brucea antidysenterica;* but Guibourt suspected it to be produced by some plant allied to Strychnos; M. Batka, a druggist of Prague, referred it to Strychnos Nux Vomica (*Guibourt*, ed. 3. ii. 4); and Mr. Pereira

informs me that Dr. Christison has lately found it identical with bark of Strychnos Nux Vomica, obtained from India for comparison.* Blume is of opinion that a great part of the *Lignum colubrinum* of commerce consists of the thick roots, and wood of the middle-sized branches of this species, more than of any other. The poisonous principle in this and other plants of the genus is the Strychnia of chemists.

1115. S. Colubrina *Linn. sp. pl.* 271. *Roxb. fl. ind.* i. 577. *Blume Rumphia* i. 70. — Modira Caniram *Rheede* viii. t. 24. — Malabar, and probably in Ceylon. (Naga Musadi of the Telingas.)

Stem of great size, often from 8 to 12 inches in diameter; the wood hard, intensely bitter and of a light grey colour; the plant with its numerous ramifications climbs over the highest trees. Bark ash-coloured, more or less scabrous, according to the age and size of the part of the young shoots, smooth and green. Tendrils lateral, simple, becoming thick and ligneous. Leaves opposite, short petioled, from oval to oblong, entire, obtusely acuminate, triple nerved; nerves extending to the apex, texture rather thin, glossy, from 3 to 6 inches long, by 2 or 3 broad. Stipules none. Corymbs terminal, small; composed of 2 or 3 pairs of opposite, few flowered, short, villous branches. Flowers small, greenish-yellow, in a subternary order. Bracts one under each division and sub-division of the corymb, tapering, villous. Calyx 5-parted, clammy, with glandular pubescence. Corolla infundibuliform, smooth. Tube cylindrical. Border 5-parted; segments linear-oblong, spreading. Filaments five, short, inserted into the mouth of the tube of the corolla under the fissures of its border. Anthers subsagittate. Ovary superior, ovate, smooth, 2-celled, with many ovules in each, attached to a fleshy ridge down the middle of the partition. Style the length of the corolla. Stigma capitate. Berry often as large as an orange, round; in the advanced state one cell only can be detected; rind rather hard and brittle; colour from a bright yellow to a dirty looking mixture of yellow and dull brown. Pulp gelatinous and yellow. Seeds from 2 to 12, orbicular, much flattened as in the Nux Vomica, peltate, nearly an inch broad. Integuments 2; the exterior one thin, but tough, and most densely clothed with soft, short hairs, like the softest velvet; the interior one a very thin brown membrane. Albumen conform to the seed, united round the margins, the middle free; resembling two cotyledons, horny. Embryo straight, much smaller than the albumen, and lodged close to the umbilicus, which may be readily known by the hair being longer at that part, forming a tuft round it. Cotyledons cordate, 3-nerved. Radicle oval, pointing to the umbilicus (centripetal). *Roxb.* — This is the most esteemed of all the *Ligna colubrina* by the natives of India, and fetches so high a price among them as rarely to find its way to Europe; it is the true *Pao de Cobra* of the Portuguese. The wood of the root is considered an infallible remedy for the bite of the *Naga* or *Cobra de Capella*, as well as for that of every other venomous snake. It is applied externally, and at the same time given internally. It is also used in substance for the cure of intermittent

* Since the above was written I have received the *Madras Journal* for April, 1837, in which there is a valuable note upon this subject by Dr. O'Shaughnessy, Professor of Chemistry in the Medical College, Calcutta. This gentleman confirms the statement that Nux Vomica bark and False Angostura are identical; and he adds that *brucea*, which is extremely effectual in the cure of paralysis, atrophy, chronic rheumatism, sciatica, &c. may be procured from it in great abundance.

fevers. Blume considers that several different kinds of Strychnos are brought into the market, under the name of Lignum colubrinum, to represent this; especially that of *S. Nux vomica*, and probably of *S. minor*.

1116. S. potatorum *Linn. suppl.* 148. *Roxb. corom.* i. 8. t. 5. *fl. ind.* i. 576. *As. res.* xi. 178. — Mountains and woods of India. (Clearing Nut.)

Leaves opposite, from ovate to oval, smooth, pointed. Corymbs from the extremities of the last year's shoots, small, bearing in ternary order many small, erect, fragrant, greenish-yellow flowers. Filaments rather longer than in *S. Nux-vomica*. Ovary and contents as in that species. Berry shining, black when ripe, 1-seeded. — The ripe seeds are dried, and sold in every market, to clear muddy water. The natives never drink clear well water, if they can get pond or river water, which is always more or less impure according to circumstances. One of the seeds is well rubbed for a minute or two round the inside of the vessel, generally an unglazed earthen one, containing the water, which is then left to settle; in a very short time the impurities fall to the bottom, leaving the water clear, and so far as I have been able to learn perfectly wholesome. These seeds are constantly carried about by the more provident part of our officers and soldiers, in time of war, to enable them to purify their water. They are easier to be obtained than alum, and are probably less hurtful to the constitution. *Roxb.* The natives of India eat the pulp of the fruit when ripe. Dr. Roxburgh found it disagreeable.

1117. S. Ignatia *Berg. mat. med.* 149. *R. and S.* iv. 548. — Ignatia amara *Linn. suppl.* 149. Ignatiana philippinica *Lour. fl. coch.* i. 155. — Philippine islands. (St. Ignatius' Bean.)

A branching tree, with long, taper, smooth, scrambling branches. Leaves ovate, acute, stalked, veiny, smooth, a span long. Hooks none. Panicles small, axillary, 3–5-flowered; with short, round, rigid pedicels. Flowers very long, nodding, white, smelling like Jasmine. Fruit smooth, pear-shaped, very small, the size of a Bonchretien Pear. — Used successfully in India as a remedy for cholera, under the name of *Papeeta*, but giddiness and convulsions are known to follow its exhibition, if given in an over dose.

1118. S. toxifera *Schomb. MSS.* — Guayana.

Stem climbing, densely covered with long, spreading, ferruginous, harsh hairs; attaching itself to other plants by means of the hooked or gyrate ends of its young shoots. Leaves rough with coarse hairiness, quintuplenerved, roundish and obtuse, or ovate-oblong and shortly acuminate. Fruit large and round. — This plant has been ascertained by Mr. Schomburgk to furnish the basis of a celebrated poison, called *Wooraly*, *Woorari*, *Ourari*, or *Urari*, in Guayana. According to Dr. Hancock, the bark, applied externally, is a good remedy for foul ulcers; in his opinion it is one of the most potent sedatives in nature, and, could it be safely managed, would no doubt become a valuable remedial agent in the treatment of convulsive and spasmodic disorders. *Med. Gaz.* xx. 281.

1119. S. Tieute *Lesch. in ann. mus.* xvi. 479. t. 23. *Blume Rumphia* i. 66. t. 24. — Java. (Tshettik or Tjettek.)

A large climbing shrub. Root woody, as thick as a child's arm,

1–2 inches in diameter. Stem as much as 80–120 feet long, without branches, only breaking into ramifications at the upper end. Leaves 3-nerved, elliptical or oblong, acuminate, smooth. Hooks solitary, opposite the leaves, thickest at the points. Cymes axillary, lax. Corolla $\frac{3}{4}$ of an inch long, funnel-shaped, greenish-white, smelling sweet like Jasmine. Fruits the size of a middling apple, each placed upon a short thick, flexuose peduncle, which is thickest at the point; globose, smooth, shining, at first brownish yellow, afterwards bright pink. — From the bark of the root there is prepared in Java, one of the most dangerous of known poisons, acting like nux vomica, only in a more intense and violent manner. It is called *Tjettek* and *Upas Radja*.

1120. S. ligustrina *Blume Rumphia* i. 68. — S. colubrina of *many authors*. Lignum colubrinum Caju Ular *Rumph.* ii. 121. t. 38. — Malayan Archipelago, where it is called "Caju-Ular, Caju-Nassi, and Caju-Bidara-pait or Caju-Bidara-laut.

A tree with the appearance of an Orange tree; the trunk 12–15 feet high, and 6 inches or more in diameter. Branches without cirrhi, sometimes spiny at the points. Leaves ovate or elliptical, obtuse, very seldom acute, narrowed to the base, 3-nerved, smooth. Flowers greenish white in small terminal cymes. Corolla downy outside, rather more than $\frac{1}{2}$ an inch long. Berries about the size of a green gage plum, globose, yellowish green, 2–8-seeded. — This yields the real ancient *Lignum colubrinum* of Timor, once held in the highest estimation as a remedy for paralysis of the lower extremities, and old cachectid disorders; but now omitted from modern practice. M. Waitz, a Dutch practitioner in Java, is stated by Blume to report most favourably of its effects, as an anthelmintic, in cases of paralysis of the lower extremities, and in *Blennorhœa faucium et laryngis*, diseases to which Europeans are very subject in Java.

1121. S. pseudoquina *Aug. de. St. Hil. pl. us. bras.* p. 1. t. 1. — Wooded pasturages in all the eastern part of the province of Minas Geraes, in the Diamond and Minas Novas districts, the forests of Goyaz and elsewhere in Brazil. (Quina do campo.)

A scrubby tree about 12 feet high, with unarmed branches and a corky bark. Leaves short-stalked, ovate, quintuplenerved, villous beneath, callous at the edge, smooth or nearly so above. Racemes axillary, erect; peduncles villous. Flowers greenish-white, sweet-scented like a lilac, downy externally. Corolla hypocrateriform. Fruit roundish, 7 or 8 lines in diameter, smooth, yellow, shining, containing about 4 seeds plunged in a sweetish pulp. — Considered by Aug. de St. Hilaire to be the best febrifuge in Brazil; with the exception of the fruit, which is eaten by children without danger, all the parts, especially the bark, are extremely bitter and rather astringent. It is universally employed instead of Cinchona, and is asserted to be fully equal to Peruvian Bark, in the cure of the intermittents of Brazil. Vauquelin analysed the bark and could find in it neither brucine, nor strychnine, nor quinine.

OPHIOXYLON.

Calyx 5-cleft, permanent. Corolla funnel-shaped; tube long, thickest in the middle; limb spreading, 5-cleft, oblique. Anthers subsessile, inserted into the middle of the tube. Ovary

double; each lobe with 1 ovule; style filiform, enclosed; stigma capitate. Drupes berried, 2, by abortion solitary, each with a rugose 1-seeded nucleus. *Blume.*

1122. O. serpentinum *Linn. fl. zeyl.* 329. *Wendt in Rõm. arch.* i. 53. t. 7. f. 2. *Blume Bÿdr.* 1034. *Roxb. fl. ind.* i. 694. — (*Rheede* vi. t. 47. *Rumph.* vii. t. 16. *Burm. zeyl.* 141. t. 64.) — Various parts of India.

Stem woody, erect, climbing or twining. Leaves in threes or fives, short-stalked, oblong, pointed, wavy, entire smooth, 4–5 × 2 inches. Fascicles axillary, peduncled, many-flowered. Peduncles long, smooth, round, sometimes nearly erect, sometimes drooping. Pedicels and calyxes bright red. Corolla white. — Root employed by the Telinga physicians of India as a febrifuge, and alexipharmic; and also to promote delivery in tedious cases.

ALYXIA.

Calyx short, 5-toothed. Corolla hypocrateriform; throat naked; limb 5-cleft. Stamens enclosed; anthers distinct. Ovary double, with 1-celled few-seeded lobes; style double; stigma 2-lobed. Drupes 2 or 1 only, stalked, containing a single 1-seeded stone.

1123. A. stellata *R. and S.* iv. 439. *Blume Bÿdr.* 1031. – Gynopogon stellatus *Forst. prodr.* 117. Alyxia aromatica *Rnwdt.* A. Reinwardtii *Blume in cat. hort. Buitenz.* 43. — Malay Archipelago, Society and Friendly Islands.

A shrub with slender twigs. Leaves in whorls of 3, lanceolate, rather obtuse, short-stalked, with very numerous fine parallel oblique veins. Cymes axillary, stalked, few-flowered, much shorter than the leaves. Tube of corolla longer than the calyx. — Bark aromatic, with similar effects to those of Canella alba and Drymis Winteri, for which it may be substituted. Lately introduced into German practice, as a remedy for chronic diarrhœa and nervous complaints. *Dierbach.* The bark has the odour of Melilot, and traces of Benzoic acid have been found in it.

WILLUGHBEIA.

Calyx 5-toothed. Corolla hypocrateriform. Stigma capitate. Ovary superior, 1-celled, with numerous ovules attached to 2 opposite parietal placentæ. Berry 1-celled. Seeds few, nestling in pulp. Albumen 0. *Roxb.*

1124. W. edulis *Roxb. fl. ind.* ii. 57. — Forests of Chittagong and Silhet where it is called Luti-am.

A very large climbing plant. Leaves opposite, short-stalked, oblong, acuminate, entire, polished, with simple parallel veins; 3–5 × 1–2 inches. Peduncles axillary and terminal, solitary, short, each supporting a few middling-sized, pale pink, short-stalked flowers, forming small fascicles. Bracts solitary, at the base of each pedicel, ovate. Calyx 5-toothed, with ovate, subciliate segments. Corolla infundibuliform; the tube gibbous near the middle where the stamens are lodged, a little hairy on the inside; the limb of 5, sublanceolate, smooth, expanding segments, which are imbricated in the bud. Fila-

ments short, inserted into the tube of the corolla a little above its base. Anthers subsagittate, but not adhering to each other. Ovary ovate, smooth, 1-celled; ovules many, attached to 2 opposite parietal placentæ; style short; stigma conical, and closely embraced by the anthers. Berry the size of a large lemon, subovate, covered with a thick, friable, pretty smooth, brownish, yellow rind, 1-celled. Seeds many, in a soft, yellowish pulp, which is intermixed with softer cottony fibres; the size of a small garden bean. — Every part of the plant on being wounded discharges copiously a very pure white viscid juice, which is soon, by exposure to the air, changed into an indifferent kind of *caoutchouc*. The fruit is eaten by the natives of the places where it grows, and is by them reckoned good. *Roxb.*

1124 *a*. W. pubescens *Nees and Martius*, is found an excellent remedy for bilious complaints in Brazil.

** *Fruit follicular.*

ALLAMANDA.

Calyx deeply 5-cleft, with lanceolate segments. Corolla funnel-shaped, very large, rather irregular, with a very long tube and a 5-cleft limb. Stamens inserted into the throat of the corolla; anthers subsessile, sagittate. Ovary surrounded by a ring; stigma capitate, contracted in the middle so as to appear double. Capsule orbicular, compressed, coriaceous, prickly with long spines, 2-valved, many-seeded; valves boat-shaped. Seeds orbicular, with a membranous border, imbricated in 2 rows, attached to the margin of the valves.

1125. A. cathartica *Linn. mant.* 214. *Bot. mag.* t. 338. — A. grandiflora *Lam. encycl.* iv. 601. *L'Herit. sertum.* iv. 8. t. 24. Orelia grandiflora *Aubl.* i. 271. t. 106. — Cayenne, Guayana, and many parts of Brazil, especially near the coast.

A climbing milky shrub. Leaves in fours, subsessile, ovate-oblong, shining, obtuse with a point, ferruginous underneath, with white hairs on the veins. Flowers fascicled, axillary, yellow, large and showy, with villous dichotomous rigid peduncles. — An infusion of the leaves is considered a valuable cathartic medicine, in moderate doses, especially in the cure of painters' colic. In over doses it is violently emetic and purgative.

1126. Rauwolfia nitida *Willd.* The root is a disagreeable bitter, and is employed in the West Indies as a remedy for colic.

NERIUM.

Corolla hypocrateriform; the orifice surmounted by lacerated multifid processes; segments of the limb contorted. Filaments inserted into the middle of the tube; anthers sagittate, adhering by the middle to the stigma. Ovaries 2; style filiform, dilated at the apex; stigma obtuse. Some teeth at the bottom of the calyx on the outside of the corolla. Follicles cylindrical.

1127. N. odoratum *Lam. enc.* iii. 436. *R. and S.* iv. 410. — N. odorum *Willd.* i. 1235. *Roxb. fl. ind.* ii. 2. *Blume Bijdr.*

1044. *Herm. lugdb.* 447. t. 448. (*Rheede* ix. t. 2.) Karavara *As. res.* iv. 265. — Common in gardens in every part of India, China and Japan. *Blume.*

Leaves linear-lanceolate, 3 together. Segments of the calyx erect. Appendages of the corolla filamentous. Anthers bearded at the point. Flowers white or red. — The bark of the root and the sweet-smelling leaves are considered by the native Indian doctors as powerful repellents, applied externally. The root taken internally acts as a poison.

1128. N. Oleander *Linn.* is very acrid. A decoction of its leaves or bark forms an acrid stimulating wash, much employed by poor people in the south of France to cure the itch and to destroy cutaneous vermin. The peasants in the neighbourhood of Nice use the powdered bark and wood to poison rats.

VINCA.

Calyx 5-cleft or 5-parted, with straight acute segments. Corolla hypocrateriform; the tube longer than the calyx; the throat with 5 plaits; the limb with 5 flat contorted segments obliquely truncate at the apex. Filaments dilated at the apex into concave scales; anthers membranous, finally twisted. Stigma capitate, contracted in the middle; the lower half peltate, the upper capitate. Two glands at the base of the ovary. Follicles 2, erect, round. Seeds naked.

1129. V. pusilla *Murray comm. gott.* 1772. p. 66. t. 2. f. 1. *Linn. suppl.* 166. — V. parviflora *Retz. obs.* ii. 14. *Roxb. fl. ind.* ii. 1. — Cultivated grounds in the East Indies.

A small erect annual. Stem smooth, 4-sided, branched, 6–12 inches high. Leaves short-stalked, lanceolate, smooth; $2\frac{1}{2} \times \frac{3}{4}$ inch; stipules subulate. Flowers small, white, axillary, in pairs. Mouth of the corolla closed with hairs. — Applied in India as an external stimulant, in cases of lumbago. *Royle.*

APOCYNUM.

Calyx half 5-cleft. Corolla campanulate, short, with 5 acute enclosed teeth opposite its lobes. Anthers sagittate, adhering by the middle to the stigma; their posterior lobes empty of pollen. Hypogynous scales 5. Ovaries 2. Stigma sessile, dilated, with a conical apex. Follicles slender, distinct.

1130. A. androsæmifolium *Linn. sp. pl.* 311. *Bot. mag.* t. 280. *Bigelow med. bot.* ii. t. 36. — Sides of fences and borders of woods in the United States. (Dog's bane.)

Height from 3 to 6 feet. Stalk smooth, simple below, branching repeatedly at top, red on the side exposed to the sun. Leaves opposite, smooth on both sides, paler beneath, ovate, acute, on short petioles. The flowers grow in nodding cymes from the ends of the branches and axils of the upper leaves, furnished with minute, acute bractes. Calyx 5-cleft, acute, much shorter than the corolla. Corolla white, tinged with red, monopetalous, campanulate, with 5 acute, spreading segments. Stamens 5, with very short filaments, and con-

nivent, oblong arrow-shaped anthers, cohering with the stigma about their middle, and often holding fast such insects as may thrust their proboscis between them. The nectary consists of 5 oblong glandular bodies, alternating with the stamens. Ovaries 2, ovate, concealed by the anthers. Stigma thick, roundish, agglutinated to the anthers. The fruit is a pair of slender linear-lanceolate follicles, containing numerous imbricated seeds, each crowned with a long pappus or down, and attached to a slender central receptacle. — Every part lactescent. Root with an unpleasant intensely bitter taste; acts as an emetic when recent. In small doses is a useful tonic.

1131. A. cannabinum *Linn.* is also emetic; and in decoction diuretic and diaphoretic.

WRIGHTIA.

Corolla hypocrateriform; the throat surmounted by 10 lacerated scales. Stamens projecting, inserted in the throat; anthers sagittate, adhering by the middle to the stigma. Hypogynous scales 0. Ovaries 2, adhering; style filiform, dilated at the apex; stigma narrower. Follicles distinct or united. There are from 5 to 10 scales at the base of the calyx, on the outside of the corolla.

1132. W. antidysenterica *R. Brown trans. Wern. soc.* i. p. 74. — Nerium antidysentericum *Linn. sp. pl.* ii. 306. Echites antidysenterica *Roxb.* (*Burm. Zeyl.* 167. t. 77.) — Coast of Malabar, Ceylon, and elsewhere in India; Isle of France.

A small shrub. Leaves ovate-oblong, or exactly oblong, shortly acuminate, smooth, bright green on each side. Corymb terminal, few-flowered. Corolla hypocrateriform, white, very sweet-scented, with a slender tube $\frac{3}{4}$ of an inch long; limb spreading, flat, about the same length, with obovate segments. Follicles very long and slender. — The bark is called *Conessi* in commerce, and has been introduced into European practice on account of its astringent febrifugal qualities.

ICHNOCARPUS.

Corolla hypocrateriform, with the segments of the limb falcate; the throat without appendages. Stamens enclosed; anthers sagittate, with the posterior lobes empty of pollen. Scales 5, hypogynous, filiform. Ovaries 2; style 1, filiform; stigma ovate, acuminate. Follicles slender.

1133. I. frutescens *RBr. in Wern. soc. trans.* vol. i. — Apocynum frutescens *Linn. fl. zeyl.* 114. *R. and S.* iv. 398. (*Burm. thes. zeyl.* 23. t. 12. f. 1.) — Ceylon.

Stems woody, smooth. Leaves short-stalked, oblong, acute, broad, smooth, veiny, dark green above, paler beneath. Peduncles axillary, long; pedicels shorter, fasciculate. Flowers small, tubular, 5-cleft, purple. Calyxes 5-cleft, oblong. — Sometimes used in India as a substitute for Sarsaparilla, according to Professor Royle. It appears from a quotation in R. and S. that it is also mentioned as a medicinal plant by Afzelius, in his *Remedia guineensia*, a work to which I have not access.

HASSELTIA.

Calyx 5-parted, permanent. Corolla with the tube contracted in the middle; the throat naked; the limb campanulate, 5-parted, contorted. Stamens inserted in the throat; anthers large, cuspidate, callous at the back, adhering to the stigma. Ovary double, surrounded by a fleshy ring; styles 2; stigma clavate. Follicles 2, distinct, long. Seeds with a stipitate coma at the lower end. *Blume.*

1134. H. arborea *Blume Bijdr.* 1046. — Java, near Tjampiam, in the province of Buitenzorg.

A handsome tree. Leaves oval, rather acute at each end, smooth above, paler and a little downy on the under side. Flowers large, yellowish white, in axillary fascicles. *Blume.* — In Java the milk, obtained from the trunk by incision, mixed with honey, and reduced with boiling water, is employed as a powerful drastic, for destroying the tape worm; it is however apt to produce inflammation of the intestines, and is even in some cases fatal.

VAHEA.

Calyx very small, with 5 segments. Corolla funnel-shaped, with a long tube, ventricose at the base; limb 5-cleft, with contorted segments. Style subulate; stigma bicuspidate in an orbicular fleshy disk.

1135. V. gummifera *Poir. enc. meth. suppl.* v. 409. — Madagascar.

Branches smooth, round. Leaves moderately stalked, coriaceous, ovate-elliptical, obtuse, shining, about 2 inches long. Flowers smooth, pale yellow, in terminal cymes. Segments of calyx acute. Tube of corolla about an inch long, with linear rather blunt segments. — Yields *Caoutchouc* in Madagascar.

URCEOLA.

Calyx 5-toothed. Corolla urceolate, ovate, 5-toothed. Anthers 5, sagittate, with a villous connective; filaments inserted into the base of the corolla. Disk campanulate, surrounding the ovary. Ovary double; stigma ovate, banded round the middle. Follicles 2, round, leathery, wrinkled, compressed, 2-valved. Seeds reniform, immersed in fleshy pulp.

1136. U. elastica *Roxb. in As. res.* v. 169. — Sumatra and Pulo Pinang.

A large woody climber, running over trees to a great extent. Young shoots a little hairy. Leaves short-stalked, ovate-oblong, pointed, a little scabrous, with a few scattered white hairs on the under side. Panicles terminal, brachiate, much branched. Flowers minute, dull green, hairy. — This plant yields a very fine kind of Caoutchouc, firm,

very elastic, scentless, and possessing all the qualities of the best samples of that substance.

PLUMIERIA.

Calyx obtuse, very small, with 5 obsolete teeth. Corolla funnel-shaped, with a long tube enlarging by degrees; limb 5-parted, somewhat erect, with ovate-oblong, oblique segments. Filaments on the middle of the tube; anthers converging. Stigma double, acuminate, nearly sessile. Follicles long, acuminate, ventricose. Seeds numerous, oblong, with a large, ovate, toothed membrane. — Small trees with succulent branches, and showy fragrant flowers.

1137. P. rubra *Linn. hort. cliff.* p. 76. *Bot. Reg.* x. t. 780. — Jamaica and Surinam.

Leaves ovate-oblong; flower-stalks downy. Flowers very large, fragrant, white outside, yellow inside, and stained with red at the ends of the segments. — Milk excessively corrosive.

1138. P. acutifolia *Poir. enc. meth. suppl.* ii. 667.—P. acuminata *Ait. Kew.* ed. 2. ii. 70. *Bot. Reg.* ii. t. 114. . P. obtusa *Lour. cochinch.* 117., not of Linn. (*Rumph.* iv. 85. t. 38.) — Malay Archipelago, and Cochinchina.

Leaves lanceolate, flat, acuminate. Flowers very fragrant, in compact cymes. Corolla white with a yellow throat; the segments linear-oblong, obtuse. — The root is used as a cathartic in Java.

1139. P. drastica *Martius*, is said to be a powerful Brazilian purgative.

CAMERARIA.

Calyx 5-toothed. Corolla between funnel-shaped and hypocrateriform, with the segments of the limb oblique. Stamens inserted in the tube; anthers acuminate, converging, extended at the point into a thread. Styles scarcely any. Follicles reflexed, lobed on each side at the base. Seeds roundish, obtusely pointed, compressed.

1140. C. latifolia *Jacq. amer.* 37. t. 182. f. 86. *Bot. Repos.* t. 261. *R. and S.* iv. 421. — Meadows in Jamaica, Cuba, and St. Domingo. (Bastard Manchineel tree.)

A tall elegant tree, with a branching head; yielding a most copious supply of white coagulable milk. Leaves roundish-ovate, cuspidate, with parallel transverse streaks, very shining, rather stiff, stalked. Peduncles 1-flowered or many-flowered, slender, long, axillary, or in the forks of the twigs. Flowers white. — It is probable that this plant, which is very abundant in Cuba, might prove a valuable source of Caoutchouc, as the milk gushes out at the smallest wound, and readily thickens. It is however said, I know not upon what authority, to be so poisonous as to be used by the West Indian natives to envenom their arrows. Jacquin mentions nothing of it, and in Lunan's compilation the juice is merely said to be acrid.

ASCLEPIADACEÆ.

Nat. syst. ed. 2. *p.* 302.

ASCLEPIAS.

Calyx 5-cleft, very small. Corolla rotate, with a short tube and a 5-parted flat or reflexed limb. Coronet of appendages 5-leaved; leaves cucullate, fleshy, erect, with a horn proceeding from within each. Pollen-masses attached by a taper point. Stigma depressed, not pointed.

1141. A. tuberosa *Linn. sp. pl.* 316. *Bigelow med. bot.* ii. t. 26. *Bot. Reg.* t. 76. — Dry sandy soils, pine woods &c. in the United States. (Butterfly weed, Pleurisy root.)

Root large, fleshy, branching, and often somewhat fusiform. Stems numerous, growing in bunches from the root, erect, ascending or procumbent, round, hairy, green or red. Leaves alternate, the lower pedunculated, the upper sessile, narrow, oblong, hairy, obtuse at base, waved on the edge, and in the old plants sometimes revolute. Umbels at the ends of terminal branches. Involucre composed of numerous, short, subulate, bracts. Flowers numerous, erect, of a beautifully bright orange colour. Calyx much smaller than the corolla, 5-parted; the segments subulate, reflexed and concealed by the corolla. Corolla rotate, 5-parted, the segments oblong and reflexed. Coronet of 5 erect, cucullate leaves or cups, with an oblique mouth, having a small, incurved, acute horn proceeding from the base of the cavity of each, and meeting at the centre of the flower. The mass of stamens is a tough, horny, somewhat pyramidal substance, separable into 5 anthers; each 2-celled, bordered by membranous, reflected edges contiguous to those of the next, and terminated by a membranous, reflected summit. Pollen masses 10, distinct, yellowish, transparent, flat and spathulate, ending in curved stalks, which unite them by pairs to a minute dark tubercle at top; each pair is suspended in the cells of 2 adjoining anthers, so that if a needle be inserted between the membranous edges of 2 anthers and forced out at top, it carries with it a pair of the pollen masses. Carpels 2, completely concealed beneath the stigma and anthers, ovate, with erect styles, terminated by a flat pentagonal disk-like stigma. Follicle lanceolate, green, with a reddish tinge and downy. Seeds ovate, flat, margined, terminated by long silken hairs. — Root expectorant and diaphoretic; employed successfully in catarrh, pneumony and pleurisy. Bigelow says he is persuaded of its usefulness as a mild tonic and stimulant.

1142. A. decumbens *Linn.* is probably a mere variety of the last, and has similar properties.

1143. A. curassavica *Linn. sp. pl.* 314. *HBK. n. g. et. sp.* iii. 149. *Swartz obs.* 126. *Bot. Reg.* t. 81. — (*Dill. elth.* t. 30.

f. 33.) — West Indies and tropical parts of the American continent.

Root fibrous. Stem about 3 feet high. Herbage covered with a fine minute downiness, especially on the stem, peduncles and calyx. Leaves lanceolate-oblong, gradually narrowed into the petiole, rather wavy. Peduncles between the petioles, shorter than the leaves, bearing at the end a simple umbel of about 8 flowers. Calyx reflexed. Corolla scarlet, with reflexed, acute segments; appendages erect, yellow, rather shorter than their horn.—This plant is called *Wild Ipecacuhana* in the West Indies, where it is employed by the negroes as an emetic. The roots, which are the part used, appear to be also purgative. A decoction is said to be efficacious in gleets and fluor albus.

CALOTROPIS.

Corolla somewhat campanulate, with an angular tube, and a 5-parted limb; the angles saccate internally. Coronet of appendages 5-leaved; leaflets carinate, attached vertically to their tube, revolute at the base. Anthers terminated by a membrane. Pollen-masses compressed, pendulous, attached by a narrow point. Stigma not pointed. Follicles ventricose, smooth.

1144. C. gigantea *RBr. in. Hort. Kew.* ed. 2. ii. 79. *R. and S.* vi. 91. *Bot. Reg.* t. 58. — Asclepias gigantea *Linn. sp. pl.* 312. Ericu *Rheede* ii. t. 31. Madorius *Rumph. herb. amb. auct.* 24. — One of the most common large shrubs all over India. (Mudar.)

Stem often as thick as a man's leg, or thigh, nearly erect, branched, abounding in an acrid milky juice. Bark ash-coloured. Young shoots covered with soft woolly down. Leaves opposite, decussate, subsessile, embracing the stem, broad, cuneate-obovate, bearded on the upper side where they end in the petiole; the upper surface pretty smooth; the under one, covered with a white woolly pubescence; from 4 to 6 inches long, and from 2 to 3 broad. Umbels generally simple, though sometimes compound, stalked. Peduncles round, covered with the same woolly substance as the leaves and young shoots, and issuing alternately from between the opposite leaves, nearly erect, half the length of the leaves. Involucres several oblong pointed scales. Flowers large, beautiful, a mixture of rose colour, and purple. Calyx 5-parted. Corolla full 2 inches in diameter; segments oblong, obtuse, revolute, reflexed at the point.—A plant of great importance in Indian medicine; employed in epilepsy, hysterics, convulsions from coitus immediately after bathing, spasmodic disorders, such as locked-jaw, convulsions in children, paralytical complaints, cold sweats, poisonous bites, and venereal complaints. *Roxburgh.* — Under the names of *Mador*, *Mudar*, *Akum*, and *Yercund*, the root and bark, and especially the inspissated juice, are used as powerful alteratives and purgatives. It is especially in cases of leprosy, elephantiasis, and intestinal worms that it has been found important. Its activity appears owing to the presence of *Mudarine*, a singular substance possessing the property of coagulating by heat and becoming again fluid by exposure to cold.

1145. C. procera *RBr. in hort. Kew.* ed. 2. ii. 78. *Bot. Reg.*

t. 1792. — Asclepias procera *Hort. Kew.* i. 305. Ascl. gigantea *Bot. Rep.* t. 271. Beid el sar *Prosp. Alp. ægypt.* c. 25. fig. — Arabia, Persia, North of Africa and adjoining islands.

A shrub or small tree, 10–20 feet high. Stem round, pale green, thickly covered with hoary pubescence, which readily rubs off. Leaves decussate, obovate, acuminate, 5×2½ inches. Peduncles corymbose, about 3-flowered, forming a loose terminal panicle. Corolla slightly campanulate, about an inch in diameter; segments ovate, acute, rather concave, dull purple bordered with white on the upper side, silvery on the under. — Juice extremely acrid. Prosper Alpinus says it was administered successfully as a remedy for ringworm, and other cutaneous affections; and that it is also a powerful depilatory. According to Professor Royle, this, or an allied species, produces a kind of *Manna*, called *Shukkr ool askur*.

HOYA.

Corolla rotate, 5-cleft. Coronet of appendages depressed, 5-leaved; leaflets spreading, fleshy, with the inner angle extended into a tooth lying upon the anther. Anthers terminated by a membrane. Pollen-masses fixed by the base, converging, compressed. Stigma not pointed or scarcely so. Follicles smooth.

1146. H. viridiflora *RBr. in Wern. trans.* i. 26. *Wight Asclep.* 39. *Bot. misc.* ii. 98. *suppl.* t. 1. — Asclepias volubilis *Linn. suppl.* 170. *Roxb. fl. ind.* ii. 36. Apocynum tiliæfolium *Lam. enc.* i. 214. — Coromandel, Sylhet, the Nilgherry Hills.

Leaves opposite, stalked, broad-cordate or ovate, but not sinuate at the base, pointed, membranous, smooth; from 3 to 4 inches long; Petioles from 1 to 2 inches long. Umbels lateral or axillary, simple, many-flowered. Flowers numerous, green, with pedicels as long as the peduncle. Corolla flat; crown of appendages turbinate, truncate. Anthers reflected over the stigma. Follicles horizontal, obtuse, about 3 or 4 inches long, and 4 in circumference. — The root and tender stalks sicken and promote expectoration. The leaves peeled and dipped in oil, are much esteemed by the natives of India as a discutient in the early stages of boils; when the disease is more advanced, they are employed in the same way to promote suppuration. *Wight.*

TYLOPHORA.

Corolla rotate, 5-parted. Coronet of appendages 5-leaved; leaflets simple, fleshy. Anthers terminated by a membrane. Pollen-masses transverse, or somewhat ascending, minute, ventricose. Stigma not pointed. Follicles smooth, tapering to the point, compressed, somewhat angular on one side.

1147. T. asthmatica *W. and A. ascl.* 51. — Asclepias asthmatica *Roxb. fl. ind.* ii. 33. Cynanchum Ipecacuanha *Willd. Jahrb. d. pharm.* 1795. 169. t. 2. C. vomitorium *Lam. enc.* ii. 235. C. viridiflorum *Bot. Mag.* t. 1929. C. tomentosum *Lam. enc.*

i. 255. — Various parts of the East Indies, both the continent and islands.

Root of many, long, thick, whitish, or light ash-coloured, fleshy fibres, issuing from a small, hard, ligneous head. Stems several, twining, slender, round, from 6 to 12 feet long; young parts downy. Leaves opposite, petioled, linear, cordate-ovate; those near the extremities are narrower, all are entire; above smooth, below downy; from 2 to 3 inches long. Petioles about half an inch long, channelled. Umbels solitary, axillary, and alternate, generally compound. Peduncles and pedicels twice the length of the petioles, round, downy. Involucres lanceolate. Flowers numerous, small, colour a mixture of bad yellow, and orange. Calyx; divisions lanceolate, very acute. Corolla flat; divisions oval. Follicles lanceolate, spreading, 3 or 4 inches long, and about 2 in circumference, *Roxb.* — Roots acrid; used on the coast of Coromandel as a substitute for *Ipecacuhana*. Dr. Roxburgh found it to answer the same purpose as that drug, and had also very favourable reports of it from others. Dr. J. Anderson, physician general at Madras, confirms this; it was used with great success in a dysentery that was in his time epidemic in the British camp. No doubt it is one of the most valuable medicines in India. In large doses it is emetic; in smaller doses often repeated it acts as a cathartic. Burnett states it to be valuable as a sudorific, and to be peculiarly beneficial in humoral asthma.

CYNANCHUM.

Corolla somewhat rotate, 5-parted. Coronet of appendages consolidated, 5-20-lobed; when 5-lobed with the segments opposite the anthers. Pollen-masses ventricose, pendulous. Stigma usually apiculate, sometimes blunt, very rarely with a beak enclosed below the summit. Follicles smooth.

1148. C. Vincetoxicum *RBr. mem. Wern. soc.* i. 47. — Asclepias Vincetoxicum *Linn. sp. pl.* 314. *Fl. Dan.* t. 849. *Nees and Eb. pl. med.* t. 208. — Sandy places in most parts of Europe except Great Britain.

Root cylindrical, creeping. Stem 1-3 feet high, erect, round, with a longitudinal downy line on each side. Leaves cordate-ovate, smooth. Flowers whitish, somewhat nodding, in corymbose umbels, 3 times as long as their common peduncle. Coronet 5-lobed. — An emetic and purgative, once celebrated as an antidote to poisons; whence its name.

1149. C. monspeliacum *Linn. sp. pl.* 311. *Cav. ic.* i. t. 60. *Jacq. ic.* ii. t. 340. *RBr.* l. c. 44. — Sea coast of Italy, Spain, South of France and Greece.

Stem running, climbing, milky. Leaves stalked, roundish cordate, with a semilanceolate contracted point. Flowers white or pink, axillary, with branched peduncles. Segments of the corolla lanceolate, rather blunt. Coronet tubular. — The inspissated juice is drastic, and known officinally under the name of *Montpelier Scammony*.

1150. C. ovalifolium *Wight. asclep.* 57. — Penang.

A smooth twining plant. Leaves oblong-oval, not cordate, acuminate. Cymes many-flowered. Peduncles longer than the petiole. Coronet

10-cleft, about as long as the corolla. Stigma pointed, emarginate. *Wight.* — Yields an excellent Caoutchouc, at Penang, according to Dr. Wallich.

1151. C. Argel *Delile descr. de l'Egypte* t. 20. f. 2. *Nees and Eb. pl. med. suppl.* — ? ? C. oleæfolium *Nectoux voy.* t. 3. — Upper Egypt.

Stems erect, pallid, round. Leaves scarcely stalked, about an inch long, ovate-lanceolate, acute, smooth on each side and rather wrinkled, glaucous on the under side. Corymbs small, axillary, with many smooth alternate branches. Sepals lanceolate. Corolla white, but little longer than the calyx. — The leaves and whole plant powerfully purgative, and even drastic. The former are mixed very largely with Senna, but whether intentionally or through carelessness does not appear; they form the bulk of many samples of Alexandrian Senna; but do not occur in those from Tinnivelly. *Gomphocarpus fruticosus*, also called *Argel* or *Arghel*, in Syria, is occasionally employed for the same purpose. If it were for no other reason than its being free from Argel leaves, the Tinnivelly Senna ought to be preferred for medical use; for there is no doubt that the griping and unpleasant effects of common Senna are attributable to their presence.

SARCOSTEMMA.

Corolla rotate. Coronet of stamens double; the exterior cup-shaped, or annular, crenated; the interior 5-leaved, longer than the outer, with fleshy segments. Anthers terminated by a membrane. Pollen-masses fixed by the point, pendulous. Stigma nearly blunt. Follicles slender, smooth. Seeds comose. *RBr.*

1152. S. glaucum *HBK. n. g. and sp. pl.* iii. 194. t. 229. — Near the port of La Guayra, Mayqueties and Cabo Blanco, on the coast of the Caribean sea.

A lactescent, smooth, twining, herbaceous plant. Leaves lanceolate, short-stalked, slightly revolute, membranous, veiny, with the midrib prominent on the under side, which is glaucous. Umbels many-flowered, between the petioles, on a very long peduncle. Flowers the size of those of Ascl. syriaca. Segments of the calyx lanceolate, acuminate, ciliated. Corolla white with a large, fleshy, wavy, annular coronet; segments of the corolla fringed, spreading. — Employed in Venezuela as an emetic, in room of *Ipecacuanha*.

HEMIDESMUS.

Corolla rotate, with 5 pointless scales inserted below the sinuses. Filaments connate at the base; distinct at the upper end, inserted into the tube of the corolla; anthers cohering separate from the stigma, beardless, simple at the point. Pollen-masses 20, granular, attached in fours to a solitary reniform appendage of each corpuscule. Stigma flattish, pointless. Follicles cylindrical, very much divaricating, smooth. Seeds comose. *W. and A.*

1153. H. indicus *RBr. in hort. Kew.* ii. 75. *Wight and Arn.*

asclep. 63. — Periploca indica *Willd.* i. 1251. Asclepias pseudosarsa *Roxb. fl. ind.* ii. 39. (*Rheede* x. t. 34. *Burm. zeyl.* 187. t. 83. f. 1. *Pluk.* t. 359. f. 2. and t. 361. f. 1.) — Common all over the peninsula of India.

Root long and slender, with few ramifications, covered with rust-coloured bark, which possesses a peculiarly pleasant sort of fragrance, whether fresh or dried. Stems twining, diffuse, or climbing, woody, slender, generally from the thickness of a goose's quill, to that of a crow's quill, nearly smooth. Leaves opposite, short stalked, in shape variable. On the young shoots that issue from old roots, and lie on the earth, they are linear, acute, and striated down the middle with white; on the superior, and old branches, they are generally broad-lanceolate, even, sometimes ovate or oval; all are entire, smooth, shining, and of a firm texture, the length and breadth very various. Stipules four-fold, small, on each side of each petiole, caducous. Racemes axillary, sessile, imbricated with flowers, and then with scales like bracts. Flowers small; outside green, inside a deep purple. Calyx divisions acute. Corolla flat; divisions oblong, pointed, inside rugose. Follicles long, slender, spreading. *Roxb.* — The *Sarsaparilla of India* is chiefly the root of this species; a decoction of it is prescribed by European practitioners in cutaneous diseases, scrophula, and venereal affections. *Ainslie.* It is said to be quite as efficient a medicine as the best Sarsaparilla of America; and is probably the drug from which Mr. Garden obtained what he calls smilasperic acid. A great deal of it is consumed in London now, as a very fine kind of Sarsaparilla.

SECAMONE.

Corolla rotate. Coronet 5-leaved; the leaflets laterally compressed, attached by the longer edge, turned backwards, simple. Pollen-masses 20, erect, attached by fours to the point of each unfurrowed corpuscle of the stigma. Stigma contracted at the point. Follicles smooth. *W. and A.*

1154. S. emetica *R. Br. in prodr. under* p. 320. *R. and S.* vi. 124. *W. and A. ascl.* 60. — Periploca emetica *Retz. obs.* ii. 14. *Willd. phyt.* i. 6. t. 5. f. 3. — Southern parts of the Peninsula of India, in thickets at the foot of mountains, common.

A smooth twining shrub. Leaves short-stalked, veinless, smooth, varying from elliptical to narrow-lanceolate. Cymes inter-axillary, few-flowered, or many-flowered, shorter than the leaves. Flowers very small, greenish. Coronet with cultriform leaflets, about half as short again as the stigma-cover. Follicles slender, tapering to the point. — Roots acrid and emetic.

1155. S. Alpini *R. and S.* vi. 125. — Periploca Secamone *Linn. mant.* 216. — Secamone *Prosp. Alpin. ægypt.* 135. t. 134. — Egypt.

Stem twining, shrubby, smooth. Leaves lanceolate-elliptical, stalked, smooth, paler beneath, with transverse veins. Panicles axillary, dichotomous, shorter than the leaves. Flowers minute, white, hairy inside. — A drastic, said by some to yield what is called *Smyrna Scammony*; but this is very doubtful.

OXYSTELMA.

Corolla somewhat rotate, spreading, with a short tube. Stigma-cover projecting. Coronet 5-leaved; with acute, compressed undivided leaflets. Anthers terminated by a membrane. Pollen-masses compressed, fixed by the attenuated point, pendulous. Stigma pointless. Follicles smooth. Seeds comose. *Wight.*

1156. O. esculentum *RBr. prodr.* 318. *R. and S.* vi. 89. *Wight and Arn. asclep.* 54. *comp. Bot. Mag.* ii. 52. t. 22. — Periploca esculenta *Linn. suppl.* 168. *Roxb. corom.* i. 13. t. 14. Asclepias rosea *Roxb. fl. ind.* ii. 40.—Hedges, among bushes on the banks of water courses, pools, &c. common on the continent of India.

Root fibrous. Stems filiform, round, smooth, green, voluble. Leaves shortly petioled, opposite, linear-lanceolate, acute, rounded and sub-cordate at the base, entire, smooth, deep green above, paler and veined beneath, deciduous? From 2 to 3 inches long, by about $\frac{1}{2}$ an inch broad. Racemes axillary, long-peduncled, bearing from 3 to 8 large, sub-campanulate, 5-cleft flowers; their segments triangular, acute, externally of a pale rosy hue, internally purplish, marked with darker lines. Column of fructification prominent; crown of 5 inflated leaves, broad, and somewhat compressed at the base, tapering to a sharp incurved point. Anthers terminated by a membrane. Pollen-masses compressed, attached by their attenuated apex, pendulous. Stigma large, flat, covered on the edges by the membranous lips of the anthers. Pericarps two large inflated follicles: these consist of two coats or layers, loosely attached to each other, and it is between these that the inflation takes place, as the inner coat is of a firm texture, and closely embraces the seeds, which are numerous and comose. *Wight.* — Said by De Candolle to be eatable; but Roxburgh says he did not find that the natives ever eat it, and Dr. Wight makes the same statement; adding, however, that in decoction it is used as a gargle for aphthous affections of the mouth and fauces.

OLEACEÆ.

Nat. syst. ed. 2. p. 307.

OLEA.

Calyx short, 4-toothed. Corolla short, hypocrateriform or rotate, with a flat 4-parted limb. Stamens rather projecting; style very short; stigma bifid, with emarginate segments. Drupe 2-celled; one of the cells usually abortive.

1157. O. europæa *Linn. sp. pl.* 11. *Vahl. enum* i. 39. *Fl. Græc.* t. 3. *S. and C.* i. t. 15. — Olea sativa *Hffsgg. fl. port.* 388. *R. and S.* i. 69. — Common in all the South of Europe, Barbary, and the Levant. (Olive.)

A small grey evergreen tree, with hoary rigid banches. Leaves lanceolate, or ovate-lanceolate, mucronate, short-stalked, green above, hoary on the under side. Racemes short, axillary, erect, very much shorter than the leaves. Corolla white, with broad ovate segments. Fruit the size of a damson, purple, with a nauseous bitter flesh enclosing a sharp-pointed stone. — From the pericarp is obtained by pressure the well-known substance called Olive oil; the medical properties of which are demulcent, emollient and laxative. It enters extensively into the preparation of plasters, liniments, cerates, ointments and enemas. As an external application, accompanied by long-continued friction of the skin, it has been found beneficial in preventing the contagious influence of the plague. The bark is bitter and astringent, and has had a great reputation as a substitute for Cinchona, according to De Candolle. It also yields a kind of gum, or rather a gum-like substance, once in repute as a vulnerary; this has been found by Messrs. Paoli and Pelletier to contain a peculiar substance which those chemists have named *Olivile*.

ORNUS.

Calyx very small, 4-cleft. Corolla divided to the base into linear segments. Pericarp a winged key not dehiscing.

1158. O. europæa *Pers. syn.* i. 9. *Mert. and Koch. deutsch. fl.* i. 357. *Dietr. sp. pl.* i. 248. *S. and C.* i. t. 53. — Fraxinus Ornus *Linn. sp. pl.* 1510. *Fl. græc.* t. 4. *Woodv.* t. 36. — South of Europe especially Calabria and Apulia. (Flowering Ash.)

A small tree 20 or 30 feet high, with a close round head. Leaves unequally pinnated, in 3 or 4 pairs; leaflets stalked, oblong, acute, serrated, very hairy at the base of the midrib on the under side. Panicles dense, terminal, nodding. Petals narrow, white, and drooping. — From the branches there exudes the bitter-sweet substance called *Manna* in the shops, well known as a useful gentle laxative.

1159. O. rotundifolia *Link. enum.* ii. 452. *Dietr. sp. pl.* i. 249. — Fraxinus rotundifolia *Linn. sp.* 1510. — Calabria and the Levant.

Very like the last. Leaflets subsessile, roundish, ovate, acute, coarsely serrated, quite smooth underneath, entire and rather cuneate at the base. — This also yields Manna, and according to Tenore of better quality than the last.

Fée says that this substance is also obtained from Fraxinus excelsior, and parvifolia, which agrees with Dr. Fothergill's statement (*Works*, p. 143.). "In Calabria and Sicily, in the hottest part of the summer months, the Manna oozes out of the leaves, and from the bark of the trunk and larger branches of the Fraxinus or Calabrian ash. The Ornus likewise affords it, but from the trunks and larger branches only and that chiefly from artificial apertures; whereas it flows from the Fraxinus through every little cranny and bursts through the large pores spontaneously. The different qualities of the Manna are from different parts of the tree."

1160. Fraxinus excelsior *Linn.* (the Common Ash) not only yields Manna, in the warm climate of the South of Europe, as has just been stated, but is reported to have a tonic febrifugal bark, and leaves almost as cathartic as those of Senna, producing an unequivocal action upon the kidneys.

1161. Syringa vulgaris *Linn.* has some reputation as a cure for intermittent fevers. The unripe fruit is singularly bitter without any acrimony, and according to Curveiller an extract of it is a remarkably good tonic and febrifuge.

CYCADACEÆ.

Nat. syst. ed. 2. *p.* 312.

CYCAS.

♂. Anthers open, collected in a terminal sessile cone, inserted all round a common rachis, each oblong cuneate, with the point turned upwards; the lower face polliniferous, and the connective more or less obliterated. ♀. Carpels numerous, open, loosely collected in a terminal cone, long, spathulate, flat, crenated, with sessile, erect, solitary ovules in the crenatures. Fruit composed of the spreading or reflexed carpels. Seeds roundish; testa bony, covered by a somewhat fleshy epidermis. Embryos often several, inserted in the axis of fleshy albumen. — Palm-like trees or shrubs.

1162. C. revoluta *Thunb. jap.* 229. *Bot. Mag.* t. 2963 and 2964. — (*Rumph.* i. 92. t. 24. *Kœmpf. amœn.* 897.) — Japan.

Stem or trunk 3 to 5 feet high, and of considerable thickness, 1 foot or more in diameter; of a dark brown colour, clothed with withered, reflexed scales, and annulated from the scars of the former years' circles of leaves. From the summit of the stem springs a beautiful crown of feathery, lively-green foliage; each leaf 5 to 6 feet long, spreading, most beautifully pinnated: pinnæ numerous, close set, linear-mucronate, dark green above, having a strong midrib, paler beneath, where the midrib is prominent, and the margin bent down or involute; rachis cylindrical; petioles 1 or 2 feet long, triangular, with a row of spines on each side, which are abortive pinnæ. From the centre of this superb crown of leaves, the fructification appears. Ovules roundish, compressed, notched, and woolly. About 6 are inserted, 3 on each side of a long, compressed, woolly, orange-coloured spadix, which is digitato-laciniate at the extremity, about a span long, and more or less incurved at the apex. These ovules are quite destitute of perianth, and even when not fertilised, change into an orange-coloured, downy nut, compressed, and notched at the extremity. The down soon disappears, and then the nut becomes glabrous and deeper coloured, more inclining to red. Within the sinus of the notch is a raised papilla, small, with a circular, margined mouth. Nut oval, a little attenuated at the base, at the apex apiculated, with a sharp point, which answers to the papilla above mentioned. *Hooker.* — The wounded stem, leaves and fruit, abound in a white, transparent mucilage, which hardens into a sort of gum. It is reported that a kind of *Sago* is procured from the cellular substance occupying the interior of the stem. It is said by Thunberg that this is "supra modum nutriens," and held in the highest esteem; soldiers are able to exist for a long time upon a very small quantity of it, and it is contrary to the laws of Japan to take the trees out of the country. The nuts are also eatable.

1163. C. circinalis *Linn. sp. pl.* 1658. *Lam. encycl.* ii. 231. *Bot. Mag.* tt. 2826, 2827. — (*Rheede* iii. t. 13—21. *Rumph.* i. 87. t. 22, 23.) — East Indies, especially the Moluccas.

♂. Trunk, when attaining its full growth, from 15 to 20 feet high, of an equal thickness throughout, marked with the scars whence the old leaves have fallen, but scarcely annulated; between which scars, the trunk is shaggy with the old and jagged downy scales or stipules, which accompany the base of the leaves; these are cordate and turgid at their base, and very much acuminated. From amongst them, and at the very top of the stem, is a crown of a most beautiful foliage. The spread of the leaves is 12 feet, each 6 and 8 feet long, including the petiole; for ¾ of the length, from the extremity, pinnated, with linear-lanceolate, nearly horizontal, plane, subflexuoso-falcate pinnæ, from 12 to 14 inches long, dark green on the upper side, paler beneath, quite glabrous, having a strong, pale midrib running through the centre; rachis unarmed; petiole swollen at the base, clothed with ferruginous, evanescent down, and unarmed; upwards glabrous, and spinous at the margin, from abortive pinnæ. The young leaves have a very beautiful appearance, being of a delicate pale green, and having the pinnæ singularly involute, like the young fronds of a Fern. From among the crown of the leaves, at the top of the trunk, and nearly, if not entirely sessile, is the male amentum produced. This is between 4 and 5 inches long, ovate. Anthers large, loosely imbricated, ferruginously downy; the lower half tapering, inserted horizontally, the upper half taking a curvature upwards and tapering into an erect, sharpened, and long point. Upon these anthers, on the under side of the lower half, the numerous pollen-cells are crowded sometimes singly, sometimes 2, 3, or 4 together, in which latter case the opening of each cell is interiorly. The consistence of these is horny; and they contain within them a pale yellow pollen, which is roundish, angular, and pellucid. *Hooker.* — A kind of Sago is said to be produced by the interior of the stem, but not the true Sago of the shops which is obtained from Sagus inermis. The fruit is eaten in the Moluccas, and a kind of flour of bad quality is procured from the kernels pounded in a mortar. It is supposed that the account given by Rheede of true Sago being the produce of the plant is a mistake. This species also yields a clear transparent gum something like Tragacanth.

ZAMIA.

Both ♂ and ♀ in cones terminating the trunk. ♂. Anthers open, in the form of peltate, woody, stalked scales, bearing pollen on their under side. ♀. Carpels open, woody, peltate, stalked, bearing 2 inverted ovules. Fruit the enlarged and ripened cone; seeds with a bony testa covered by a thin fleshy coating. — Small trees, with scaly trunks which are either simple or branched. Leaves pinnated, with the pinnæ contracted at their insertion into the petiole.

*** One of the best kinds of arrow root is prepared in the Bahamas from the trunk of some species of this genus, but from which is unknown; no doubt some one of the following, all of which are West Indian.

1164. Z. angustifolia *Jacq. ic. rar.* t. 636. *Willd. sp. pl.* iv. 846.; with linear, entire, callous-pointed, twice emarginate, obtuse leaflets, and a half-terete petiole.

1165. Z. tenuis *Willd.* l. c.; with the leaflets linear, narrowed to the base, obtuse, obscurely toothed under the point, somewhat revolute at the edge, and a triquetrous smooth petiole.

1166. Z. media *Jacq. hort. schönbr.* iii. 77. t. 397. 398. *Willd.* l. c. with the leaflets linear-lanceolate, obtuse, flat, obsoletely serrulated beneath the point, and a triquetrous smooth petiole.

1167. Z. debilis *Ait. Kew.* iii. 478. *Willd.* 847. with lanceolate, acute, unpointed leaflets serrated at the point, and a triquetrous compressed smooth petiole.

1168. Z. pumila *Linn. sp. pl.* 1659. (Z. integrifolia *Ait. Kew.* iii. 478. *Jacq. ic.* t. 635.) with the leaflets lanceolate, rounded, obtuse, narrowed to the base, serrulated on the outer edge at the point, and a smooth somewhat 4-cornered petiole.

1169. Z. furfuracea *Ait. Kew.* iii. 477. *Willd.* 848, with the leaflets lanceolate, acute, pointless, serrated from the middle as far as the apex, furfuraceous beneath, and a roundish petiole spiny at the base.

PINACEÆ, or CONIFERÆ.

Nat. syst. ed. 2. *p.* 313.

PINUS.

Flowers monœcious. ♂. Catkins solitary or stalked. Stamens numerous, inserted on an axis; filaments very short; anthers 2-celled, terminated by a crest, or scale-like connective; the cells bursting longitudinally or irregularly in a transverse direction. ♀. Catkins solitary or clustered. Scales imbricated, usually subtended by an adnate scale. Ovules 2, at the base of the scales, collateral, inverted, their points lacerated and directed downwards. Cone consisting of hard woody truncated scales, excavated at the base for the reception of the seeds. Seeds extended at the base into a membranous wing. — Leaves evergreen, in fascicles, surrounded at the base by a membranous tubular sheath.

1170. P. sylvestris *Linn. sp. pl.* 1418. *Lamb. pin.* t. i. *E. Bot.* t. 2460. *Woodv.* t. 207. *Loudon Arb. et Frut.* 2153. — Sandy hills and woods of Europe, north of the Alps. (Scotch Fir, Red Deal.)

Sheaths of the leaves spirally disposed, tubular, membranous, at length rugged, torn at the end. Leaves in pairs from each sheath, equal, about 2 inches long, linear, narrow, obtuse with a small point, minutely serrated, evergreen, smooth; their upper surfaces, which are dark green, and rather concave, originally clapped together, but soon separated; the under convex, more glaucous, striated. Flowers terminal, erect; the males aggregate spiked, sulphur-coloured, soon surmounted by a protruding leafy branch, each flower having several chaffy concave scaly bracteas at its base, which some call a 4-leaved calyx: females solitary, globular, variegated with purple and green, with several serrated, pointed, scaly bracteas. The first year, after impregnation, the young fruit becomes lateral, stalked and reflexed, green, of an ovate figure; and the second year ripens into ovate, pointed, hard, tessellated but unarmed, woody cones, whose dry scales finally gape, and allow of the dispersion of the winged seeds. *Smith.* — *Common turpentine* is obtained from this.

1171. P. Pumilio *Willd. sp.* iv. 495. *Lamb. pin.* t. 2. *Loudon Arb. et Frut.* 2186. — Mountains in the South East of Europe.

Very like a Scotch Fir only not forming a tree, but always remaining a low bush. Leaves in pairs, short, straight. Cones ovate, obtuse, very small; the younger ones sessile and erect. Crest of the anthers projecting, slit. — *Hungarian balsam* is spontaneously exuded by the branches of this species.

1172. P. Pinaster *Ait. Kew.* ed. 1. iii. 367. *Lamb. pin.* tt. 4 and 5. *Loud. Arb. et Frut.* 2213. — P. maritima *DC. fl. franç.* — Southern parts of Europe; especially the sandy wastes north of the Mediterranean. (Pinaster, Cluster Pine.)

A much larger plant than the Scotch Fir, forming first a spreading handsome dark green bush, and afterwards a fine tree. Leaves stout, in pairs, fully 4 inches long. Male flowers in a thyrsoid panicle, of a bright yellow, terminating the branches. Crest of the anthers rounded, orbicular, crenated. Female flowers with rich crimson scales. Cones large, woody, whorled, pendulous, ovate, sessile, bright brown; each scale tipped with a short, broad, bluntish spine. — *Bordeaux turpentine*, which has the property of solidifying with magnesia, is procured from this plant.

1173. P. Cembra *Linn. sp. pl.* 1419 is said to yield *Carpathian Balsam.*

ABIES.

In all characters the same as Pinus, except that the scales of the cones are thinned away to the edge, and usually membranous or coriaceous, and that the leaves are never fascicled.

1174. A. Picea *Lindl. in penny. cycl.* — A. pectinata *DC. fl. fr.* ii. 275. Pinus Picea *Linn. sp. pl.* 1420. *Lamb. pin.* t. 30. *Woodv.* t. 209. Picea pectinata *Loud. arb. et frut.* 2329. — Mountains of Siberia, Germany, and Switzerland. (Silver Fir.)

Branches horizontal. Leaves copious, linear, either acute or emarginate, entire, spreading more or less perfectly in 2 ranks, and sometimes curved towards one side; their upper surface of a dark shining, rather glaucous, green; the under glaucous-white. Male flowers numerous, axillary, solitary, about as long as the leaves, yellow; their axis the length of the toothed involucre; anthers remarkable for their rounded 2-lobed crest, crowned with a pair of divaricated horns. Female catkins lateral, erect, cylindrical, green; bracts much narrower than the carpellary scales, distinguished by a long, projecting, awl-shaped point, very conspicuous in the full-grown cones, which are also erect, 3 or 4 inches long, cylindrical, of a reddish-green, till they turn brown in drying. *Smith.* — *Strasburgh Turpentine* is obtained from this.

1175. A. balsamea *Marsh. arb. amer.* 102. — A. balsamifera *Michx. arb. forest.* iii. 191. Pinus balsamea *Linn. sp pl.* 1421. *Lamb. pin.* t. 41. Picea balsamea *Loud. arb. et frut.* 2339. — Northern parts of North America. (Balm of Gilead Fir.)

A handsome small tree resembling the preceding from which it differs in having the bracts short-pointed, the crest of the anthers pointless, and the cones themselves more acute at each end. The tree itself is never above 20 or 30 feet high. — The oleo-resin called *Canada balsam* is furnished by this species.

1176. A. Larix *Lam. illustr.* t. 785. f. 2. — Pinus Larix *Linn. sp. pl.* 1420. *Lamb. pin.* t. 35. *Woodv.* t. 210. Larix europæa *DC. fl. fr.* No. 2064. *Loud. arb. et frut.* 2350. —

Alps of Italy, Switzerland, Germany, Siberia, &c. (The common Larch.)

The Larch is a tree of straight and lofty growth, as well as large bulk, with wide-spreading branches, whose extremities droop in the most graceful manner. In a wild state its form is less regular, but more picturesque. The buds are alternate, perennial, cup-shaped, scaly, each producing annually a pencil-like tuft of very numerous, spreading, linear, bluntish, entire, smooth, tender, bright-green, deciduous leaves, about an inch long. Involucrating leaves to each flower numerous, recurved, obtuse, with 5 fringe-like teeth, chaffy, red-brown, deciduous. Male flowers yellow, drooping, about ½ an inch long. Axis much shorter than the involucre; anthers crowded, deflexed, inflated, and 2-lobed in front, with a short recurved point. Female catkins erect, larger than the male flowers, beautifully variegated with green and pink; carpellary scales orbicular; bracts much larger, fiddle-shaped, reflexed, with a prominent, awl-shaped green point. This last becomes erect, and somewhat enlarged, projecting always beyond the orbicular carpel, which dilates greatly, hardens, and becomes the seed-bearing scale of the cone. The cones are erect, rather above an inch long, ovate; purple when young; reddish-brown when ripe, light, not ponderous, their scales spreading, orbicular, slightly reflexed, and jagged, or cracked, at the margin. Wing of each seed half-ovate. *Smith.* — *Venice turpentine* is obtained from the trunk. A saccharine matter called *Manna of Briançon* exudes from the branches, and when the larch forests in Russia take fire a gum issues from the trees during their combustion, which is termed *gummi Orenbergense;* and which is wholly soluble in water like Gum Arabic.

CALLITRIS.

Flowers monœcious on different branches. ♂. Catkins terminal, oval. Stamens numerous, naked, inserted on the axis; filaments eccentrically peltate, loosely imbricated; anther-cells 2–5, longitudinally 2-valved, inserted in the stalk below the pelta. ♀. Receptacle terminal, very short. Scales 4–6, surrounding the receptacle, opposite in two rows or ternate in whorls, the pairs or whorls different from each other in form and in the number of the ovules. Ovules 3–9 at the base of each scale, sessile, erect, with their points open. Cone formed of the scales become woody and mucronate under the point, closely converging, but in time opening into 4–6 valves. Seeds winged on each side. — Cypress-like trees.

1177. C. quadrivalvis *Vent. Rich. mem. conif.* 46. *Loudon Arb. et frut.* 2462. — Thuja articulata *Desf. atl.* iii. 353. t. 252. *Bot. Cab.* t. 844. — Upper part of the province of Temsme, in the kingdom of Morocco. *Schousboe.* (Arar tree.)

A tree of enormous size (Schousboe). Branches when young jointed, furrowed, very brittle, leafless; with whorls of ovate mucronate short scales at the joints. Fruit the size of a large pea, deep purple, glaucous, 4-cornered, with the angles rounded, the sides hollowed out, and a small projecting point near the apex of each hollow; when ripe

dividing into 4 valves. — Yields the resinous substance called *Sandarach* from which is prepared the *pounce* employed in rendering parchment fit to write upon.

JUNIPERUS.

Flowers dicœcious, rarely monœcious, upon different branches. ♂ Catkins axillary or subterminal, globose, very small. ♀ Catkins axillary, ovate, imbricated, with bracts at the base. Scales 3–6, united at the base, and containing 1–3 ovules; which are erect, perforated at the apex, and bottle-shaped. Fruit a galbulus, consisting of the scales become succulent, and consolidated into a drupe-like body. Seeds triquetrous.

1178. J. communis *Linn. sp. pl.* 1470. *E. Bot.* t. 1100. *Woodv.* t. 95. *Bigelow med. Bot.* iii. t. 44. *Loudon Arb. et frut.* 2489. — Europe, north of Asia, North America. (Juniper.)

A shrub, never attaining the height of a tree. Tips of the branches smooth and angular. Leaves in threes, linear-acerose, sharply mucronate, shining green on their lower surface, but with a broad glaucous line through the centre of the upper; they are always resupinate, and turn their upper surface toward the ground. Barren flowers in small axillary aments, with roundish, acute, stipitate scales, inclosing several anthers. Fertile flowers on a separate shrub, having a small, 3-parted involucre growing to the scales, which are 3 in number. Fruit fleshy, roundish-oblong, berried, of a dark purplish colour, formed of the confluent succulent scales, marked with 3 prominences or vesicles at top, and containing 3 seeds; it requires two seasons to arrive at maturity. —The fruits, called Juniper berries, are analogous in operation to other terebinthinate substances. They promote the secretion of urine, in large quantities produce irritation of the bladder and heat in the urinary passages, are sudorific, carminative, and are supposed to stimulate the uterus. They are sometimes used as a stimulating diuretic in many forms of dropsy; Mr. Alexander says that the oil, in doses of 4 drops, is the most powerful of all diuretics. They are also administered in leucorrhœa, gonorrhœa, gleet, &c.

1179. J. virginiana *Linn. sp. pl.* 1471. *Bigelow med. bot.* iii. t. 45. *Loudon Arb. et frut. Britt.* 2495. — Barren soils in the United States. (Red Cedar.)

When fully grown a middling-sized tree. Trunk straight and decreasing rapidly from the ground, giving off many horizontal branches; its surface generally unequal, and disfigured by knots, and the crevices and protuberances they occasion. Small twigs covered with minute, densely imbricated leaves, which continue to increase in size as the branches grow, till they are broken up and confounded with the rough bark; these leaves are fleshy, ovate, concave, rigidly acute, marked with a small depressed gland on the middle of their outer side, growing in pairs, which are united at base to each other, and to the pairs above and below them. A singular variety sometimes appears in the young shoots, especially those which issue from the base of the trees; this consists in an elongation of the leaves to 5 or 6 times their usual

length, while they become spreading, acerose, remote from each other, and irregular in their insertion, being either opposite or ternate; such shoots are so dissimilar to the parent tree that they have repeatedly been mistaken for individuals of a different species. The barren flowers grow in small oblong aments, formed by peltate scales with the anthers concealed within them. The fertile flowers form a small roundish galbulus, with 2 or 3 seeds, covered on its outer surface with a bright blue powder. — Similar in effects to J. Sabina, for which it is used in North America as a substitute.

1180. J. Sabina *Linn. sp. pl.* 1472. *Woodv.* t. 94. *Loudon Arb. et frut. Britt.* 2499. — Midland parts of Europe and Russia in Asia. (Savin.)

A dull deep-green very compact bush, usually more disposed to spread horizontally than to form a stem. Branches slender, round, tough, closely covered with short acute imbricating leaves; they are very bitter and have a strong disagreeable smell. Fruit deep bluish-purple, almost black, about the size of a currant. — *Oil of savin* is a powerful local stimulant, acting, when applied to the skin, as a rubefacient and vesicant; swallowed it occasions vomiting and purging. It is a powerful stimulant, and exercises a specific influence over the urino-genital apparatus. In certain cases of amenorrhœa it acts as a powerful emmenagogue, and in pregnancy it has a strong tendency to produce abortion; it, however, frequently fails, and can only be given to a woman at the risk of her life. Savin powder mixed with verdigris is used as an efficacious application for the removal of venereal warts, and in the form of ointment it is an excellent means of promoting discharge from blistered surfaces.

TAXACEÆ.

Nat. syst. ed. 2. p. 316.

TAXUS.

Flowers dicœcious axillary. ♂ Catkins roundish, surrounded at the base by imbricated scales. Stamens 6–14, with peltate 3–8-celled anthers. ♀ Catkins bud-like, 1-flowered, surrounded by imbricated scales. Disk cup-shaped, at first inconspicuous, afterwards increasing, becoming succulent, and enclosing the nut-like seed.

1181. T. baccata *Linn. sp. pl.* 1472. *E. Bot.* t. 746. *Smith Eng. Fl.* iv. 253. — Mountainous woods, especially in limestone countries. (Yew.)

Trunk straight, variously channelled longitudinally, with a smooth deciduous bark; and horizontal branches, spreading in opposite directions. Leaves scattered, nearly sessile, 2-ranked, linear, entire, very

slightly revolute, about an inch long; dark green, smooth and shining above; paler, with a prominent midrib, beneath, terminating in a small harmless point. Flowers axillary, solitary, each from a scaly imbricated bud; the barren ones light brown, white with abundant pollen: fertile green, resembling, with their scaly bracteas, a little acorn. Fruit drooping, consisting of a sweet, internally glutinous, scarlet berry, open at the top, enclosing an oval brown seed, unconnected with the fleshy part. *Smith.* — Leaves fetid, very poisonous, especially to horses and cows. Berries are not dangerous. Seeds said to be unwholesome. On the authority of an Italian physician it is stated that yew-leaves, when administered in small doses to man have a power similar to that of Digitalis, on the action of the heart and arteries, reducing the circulation, and if persisted in too long, or given in too large doses, as certainly fatal. Yew is however reported to have one decided advantage over Digitalis by its effects not accumulating in the system; so that it is a much more manageable and more efficient remedy. *Burnett.*

ZINGIBERACEÆ.

Nat. syst. ed. 2. p. 322.

ZINGIBER.

Corolla with the outer limb 3-parted, inner 1-lipped. Filament lengthened beyond the anther into a simple incurved beak. Capsule 3-celled, 3-valved. Seeds numerous, with arils. — Rhizomata tuberous, articulated, creeping. Stems annual, enclosed in the sheaths of distichous leaves. Leaves membranous. Spikes cone-shaped, radical or rarely terminal, solitary, consisting of 1-flowered imbricated bracts. *Blume.*

1182. Z. officinale *Roscoe in Trans. Linn. Soc.* viii. 348. *Roxb. Fl. Ind.* i. 47. *N. and E. handb.* i. 238. *pl. med.* t. 61. — (*Rumph.* v. t. 66. f. 1. *Rheede* xi. t. 12.) — Cultivated all over the tropics of Asia and America; where wild not known. (Ginger.)

Rhizoma tuberous, biennial. Stems erect, and oblique, invested by the smooth sheaths of the leaves; generally 3 or 4 feet high, and annual. Leaves sub-sessile on their long sheaths, bifarious, linear-lanceolate, very smooth above, and nearly so underneath; sheaths smooth, crowned with a bifid ligula. Scapes radical, solitary, a little removed from the stems, from 6 to 12 inches high, enveloped in a few obtuse sheaths, the uppermost of which sometimes end in tolerably long leaves. Spikes oblong, the size of a man's thumb. Exterior bracts imbricated, 1-flowered, obovate, smooth, membranous at the edge, faintly striated lengthwise; interior enveloping the ovary, calyx, and the greater part of the tube of the corolla. Flowers rather small, when compared with the rest of this natural order. Calyx tubular, opening on one side, 3-toothed. Corolla with a double limb; outer of 3, nearly equal, oblong segments; inner a 3-lobed lip, of a dark purple colour. Sterile stamens subulate. Filament short. Anther oblong, double, crowned with a long, curved, tapering grooved horn. Ovary oval, 3-celled, with many ovules in each; style filiform; stigma funnel-shaped, ciliate, lodged just under the apex of the horn of the anther. — This is the plant that produces Ginger, which is prepared from the rhizoma. The young tender shoots of this part are preserved in sugar, the older are scalded, scraped, dried and become the white ginger root of the shops; if scalded without being scraped it becomes black ginger. One of the most valuable of aromatics, carminative, stimulant, sialagogue. Used in flatulent colic, dyspepsia, gout, debility and torpor of the system.

1183. Z. Zerumbet *Roscoe in Linn. Trans.* viii. 348. *N. and E. handb.* i. 240. *pl. med.* t. 62. *Fée cours.* i. 348. — (*Rheede* ii. t. 13.) — East Indies; wild in woods about Calcutta; rare in moist places in Java.

Leaves sessile, broad-lanceolate, acuminate, smooth; sheaths with a long slit ligula. Spike compact, ovate, obtuse. Bracts obovate, rounded, smooth, membranous at edge. Middle lobe of the labellum emarginate, yellow. *Blume.* — Rhizomata tuberous, flexuose, with an agreeable smell resembling that of ginger, and a hot bitter aromatic flavour. Not now used (Radices Zerumbethi *Offic.*). N.B. According to Blume the Lampujum of *Rumph.* v. t. 64. f. 1. cited to this by Roxburgh, really belongs to a different species which he calls Z. amaricans (*enum.* 43).

1184. Z. Cassumunar *Roxb. in As. research.* xi. 347. t. 7. *Fl. Ind.* i. 49. *Bot. Mag.* t. 1426. *N. and E. handb.* i. 240. *Pl. med.* t. 63.—(*Rumph.* v. t. 65. f. 2.)—East Indies; Coromandel, Bengal, Bahar, western provinces of Java.

Rhizoma tuberous, jointed like ginger, but much larger, with long white fleshy fibres; when fresh deep yellow; possessing a strong not very agreeable camphoraceous smell and warm spicy bitterish taste. *Roxb.* Leaves sessile, linear-lanceolate, acuminate, downy on the under side upon the midrib; sheaths with a short retuse rounded ligula. Spikes elevated, oblong, acute. Bracts wedge-shaped, oblong-acuminate, somewhat strigose, coloured. Labellum 3-lobed. *Blume.* Once in great repute as a medicine of uncommon efficacy in hysteric, epileptic, and paralytic disorders; but now out of use.

CURCUMA.

Tube of the corolla gradually enlarged upwards; limb 2-lipped, each 3-parted. Filament broad. Anther incumbent, with 2 spurs at the base. Style capillary. Capsule 3-celled. Seeds numerous, arillate. — Stemless plants, with palmate tuberous roots. Leaves with sheathing petioles, bifarious, herbaceous. Scape simple, lateral or central. Spike simple, erect, comose, somewhat imbricated at the base with bracts or saccate spathes. Flowers dull yellow, 3–5 together, surrounded by bracteolæ. *Blume.*

1185. C. Zerumbet *Roxb. Fl. Ind.* i. 20. *N. and E.* i. 242. *fl. med.* t. 60. *Blume enum.* i. 46. — (*Rumph.* v. t. 68. *Rheede* xi. t. 7.) — East Indies; Chittagong; western side of Java.

Tubers palmate or ovate, inwardly pale yellow, with an agreeable camphoraceous smell, and warm, bitterish, spicy taste. Stems the united sheaths of the leaves, surrounded by 2 or 3, obtuse, smooth, green, faintly striated appressed scales. Height of the plant about 3 feet, or 3½. Leaves from 4 to 6 together, sub-bifarious, with a pretty long, somewhat winged petiole, broad, lanceolate, acuminate, smooth on both sides; constantly a dark purple cloud runs down the centre. Scape from 5 to 6 inches long, surrounded with a few, obtuse, lax, green sheaths of various lengths. Spike comose, from 4 to 5 inches long (so that its apex is elevated nearly a foot above the surface of the earth), covered with imbricated, oblong, concave bracts, connected by the lower half of their inner margins to the backs of those immediately above, forming as many sacks or pouches, as there are bracts; half of these generally sterile, and of a deeper crimson or purple colour, than

those which contain flowers. Calyx scarcely $\frac{1}{3}$ the length of the corolla, irregularly 3-toothed, pellucid. Corolla funnel-shaped; tube a little curved. Limb double: exterior 3-parted, the 2 lateral segments equal; the third or upper one vaulted, and crowned with a subulate point; colour a very faint yellow: interior 3-parted, lip broad, deep yellow, projecting, recurved, bifid; upper or lateral segments, obovate, equal, pale yellow, nearly as long as the lip. Filament short. Anther double, the lobes terminating at the base in a subulate spur. Ovary hairy, 3-celled, with many ovules in each cell. Stigma 2-lobed, surmounting the anther. Capsule oval, smooth, pale straw-colour, thin and nearly pellucid, 3-celled; but without any regular division into valves: when the seeds are ripe, the elasticity of the segments of the arils bursts the vertex into various portions, from whence the seeds are soon expelled. Seeds numerous, arillate, usually oblong. Aril deeply lacerated, with unequal, white, fleshy segments. Albumen white, hard, and friable. Vitellus less white, and tougher than the albumen, occupying the upper half of the seeds. Embryo nearly as long as the seed, truncate; the upper half lodged in the vitellus, and the lower in the albumen. *Roxb.* — The *Zedoaria longa* of the shops. See C. Zedoaria.

1186. C. Zedoaria *Roxb. fl. ind.* i. 23. *N. and E.* i. 243. — Bengal, China, and various other parts of Asia, and the Asiatic islands. (Jedwar or Zadwar *Arab.*)

Tubers biennial, &c. as in the last, and inwardly of a pretty deep yellow colour, approaching to that of turmeric. Stem no other than the sheaths of the leaves. Leaves petioled, broad-lanceolate, entire, underneath covered with soft sericeous down, which is particularly conspicuous when the leaves are dry. The scape rises distinct from the leaves during the dry season, and often not only at some distance, but also some time before them: it is round, as thick as a man's forefinger, a few inches long, and embraced by its own short, proper, green sheaths. Spike from 6 to 12 inches long, &c. exactly as in the last species. Bractes and calyx as in the before-mentioned species. Corolla 1-petalled, at the base tubular; tube short, widening a little; its mouth shut with fine yellow pubescent glands; throat ample. Border double; exterior of 3 pale pink-coloured, erect, oblong divisions; the upper one more pointed and incumbent over the anther and part of the 2 upper divisions of the inner border. Interior somewhat ringent, 3-parted, fleshy, yellow; the lower lobe or lip longest, obovate, entire, projecting with a crown and erect margin, while a broad elevation of a deep yellow colour runs along its middle; upper 2 divisions obovate, and with the upper segment of the exterior border, forming a complete covering or dome over the anther. — The *Zedoaria rotunda* of the shops. Employed in cardialgia, colic, cramp in the limbs, torpor of the intestinal canal, &c. The Hindoos use the roots as a perfume, as well as medicinally. Aromatic, stomachic, carminative, similar in properties to Ginger but less efficient. M. Fée still refers the Zedoaria rotunda to Kæmpferia rotunda, notwithstanding the express declaration of Roxburgh that the tubers of that plant possess little or nothing of the sensible properties of Zedoary.

1187. C. rubescens *Roxb. fl. ind.* i. 28 — Bengal.

All the parts have a pleasant aromatic smell when bruised, especially

the tuber, which consists of several, erect, solid, conical, pale straw or pearl-coloured, powerfully aromatic fangs, which gave support to the former years' foliage, and are strongly marked with the circular scars thereof; from their opposite sides, the scapes and stems of the succeeding year spring, which form similar new tubers when those of the former year decay; but during their existence, there issues round their lower half, a number of strong fleshy fibres, many of which end in ovate, or subcylindrical, pale, white slightly aromatic tubers, which also perish with the original parent. Leaves bifarious, broad-lanceolate, cuspidate, smooth, strongly marked with parallel veins; of a uniform dark green, with the nerves or ribs red, from 12 to 24 inches long, by 5 or 6 broad. Petioles and sheaths channelled, smooth, and of a deep red colour. Scape radical, lateral, cylindrical, about 6 inches long, invested with several dark reddish sheaths. Spike comose, 5 or 6 inches long, erect. Coma less deeply coloured than in C. Zerumbet. Flowers small, bright yellow, rather longer than their bracts, fragrant. Tube of the corolla slender, its mouth completely shut with 3 villous yellow glands. — The pendulous tubers of this and several other species of Curcuma yield a very beautiful pure starch, like *Arrow-root*, which the natives of the countries where the plants grow prepare and eat. In Travancore this flour or starch forms a large part of the diet of the inhabitants.

1188. C. leucorhiza *Roxb. fl. ind.* i. 30. *N. and E. handb.* i. 245. — Forests of Bahar, where it is called "Tikor."

The palmate or horizontal tubers are particularly straight, and often near a foot long: they run deep in the earth, and far. Their inward colour, as well as that of the others, is a very pale ochraceous yellow, almost pure white. Pendulous tubers numerous, oblong, inwardly pearl white. Leaves broad, lanceolate uniformly green, about 2 feet long. Whole height of the plant from 3 to 4 feet. Spikes lateral, the inferior fertile portion not longer than the rosy coma. Flowers the length of the bracts; exterior border slightly tinged with pink; inner yellow. — The tubers produce excellent arrow-root.

1189. C. longa *Linn. sp. pl.* 3. *Retz. obs.* iii. 72. *N. and E. handb.* i. 246. *pl. med.* 59. *Bot. Reg.* t. 1825. — (*Rheede* xi. t. 11. *Rumph.* v. t. 67.) Κυπειρος ινδικος, *Diosc.* according to Fée. — Cultivated all over India. (Turmeric.)

Tubers oblong, palmate, deep orange inside. Leaves long-stalked, lanceolate, tapering to each end, smooth, of a uniform green. Spike central, oblong, green. — Bitter, aromatic, stimulant, tonic; employed in debilitated states of the stomach, intermittent fever, dropsy. See *Roxb. fl. ind.* i. 33. Considered by the native practitioners of India an excellent application in powder for cleansing foul ulcers. Also used in dyeing.

1190. C. angustifolia *Roxb. as. research.* xi. 338. t. 5. *fl. ind.* i. 31. *N. and E. handb.* i. 245. —East Indies; forests from the banks of the Sona to Nagpore.

From a fusiform biennial crown issue many fleshy fibres, which end in smooth, oval, succulent tubers. Leaves stalked, narrow-lanceolate, very acute, smooth on both sides; from 1 to 3 feet long (petiole and sheath included), which indeed is the whole height of the plant. Petioles from 6 to 12 inches long, the lower half or more of which, expands into a sheath to embrace those within, the upper half or proper

petioles slender and channelled. Spike radical, from 4 to 6 inches long, separate from the leaves, crowned with a lively purple coma. Bracts ovate-cordate, obtuse. Flowers large, longer than their bracts, bright yellow, expanding at sunrise, and decaying at sunset of the same day. Tube of corolla somewhat gibbous, contracted at the mouth, and there shut in with short hairs: throat campanulate; exterior border pale yellow, consisting of one large, vaulted, upper segment, and two lower, oblong, smaller, concave ones; inner border 3-parted: the lip roundish, emarginate, or bifid, upper segments obovate, cuneate, with the filament between them. — Tubers produce excellent Arrow Root, sold in the markets of Benares, and eaten by the natives.

1191. C. Amada *Roxb. fl. ind.* i. 33. — Bengal.

Tubers horizontal, palmate, sessile, united to the sides of an ovate-conic bud of the same colour, which gives rise to the leaves and spike; from its sides and base long fleshy fibres issue, which penetrate deep into the soil: some of them ending in oblong, paler (pendulous) tubers. Leaves radical, bifarious, petioled above their sheaths, lanceolate, cuspidate, smooth on both sides; from 6 to 18 inches long, by 3 to 6 broad. Scape central, about 6 inches long, invested by several alternate sheaths. Spike shorter than the scape, cylindrical, with a loose, coloured, pale rose coma. Bracts oblong, imbricated, the lower half of their margins united to the backs of the two next above, forming a pouch for a fascicle of 4 or 5, rather small, yellow flowers, which expand in succession. Calyx superior, unequally 3-toothed. Corolla with a slender tube; its mouth shut with 3 yellow hairy glands; faux sub-campanulate. Border double, each 3-cleft. — Called by the Bengalees, "Amada," or Mango ginger, the fresh root possessing the peculiar smell of a fresh Mango.

KÆMPFERIA.

Tube of corolla long, filiform; limb somewhat 2-lipped, each lip 3-parted. Filament short, expanded above the anther into a bifid crest. Capsule 3-celled, many-seeded. — Plants with the habit of Curcuma; bracts often imbricated in 2 rows, rarely saccate. *Blume.*

1192. K. Galanga *Linn. sp. pl.* 3. *Roxb. fl. ind.* i. 15. — Alpinia sessilis *König in Retz. obs.* iii. 62. — (*Rumph.* v. t. 69. f. 2.) — Common in India both on the continent and islands.

Rhizoma biennial, tuberous, with fleshy fibres from the tubers. Stem none. Leaves stalked, spreading flat on the surface of the earth, round-ovate-cordate, between acute and obtuse; margins membranaceous, and waved; upper surface smooth, deep green; taper and somewhat woolly towards the base; streaked lengthways with 10 or 12 slender lines. Flowers collected in small fascicles, from 6 to 12 within the sheaths of the leaves, expanding in succession; pure, pellucid white, except a purple spot on the centre of each of the divisions of the inner series. Bracts 3 to each flower, 1 larger and exterior, 2 interior and lateral; all linear, acute, membranous, and half the length of the tube of the corolla. Calyx the length of the bracts. Tube of corolla long, filiform; limb double, both series 3-parted; exterior divisions all linear, acute; of the interior, the upper two ovate, erect, the

lower spreading, 2-parted, with bifid lobes. — According to Roxburgh the roots of this plant have an agreeable fragrant smell, and a somewhat warm bitterish aromatic taste; but they are unknown in London, although used medicinally by the Hindoos. It does not produce the Galanga major of druggists, and seems to have no other right to its specific name than what it derives from its supposed identity with the Katsjula *Kelengu*, of Rheede (xi. t. 41.). Fée says the roots are the Radices Alpiniæ spuriæ. *Offic.* True Galanga is the produce of Alpinia Galanga, which see. (No. 1201.)

1193. K. rotunda *Linn. sp. pl.* 3. *Roxb. fl. ind.* i. 16. — (*Rheede* xi. t. 9.) — Cultivated all over India; its native place unknown.

Leaves oblong, coloured. Spike radical, appearing before the leaves, which are oblong, waved, and usually stained underneath. Upper segment of the inner series of the corolla lanceolate, acute. Flowers very fragrant. — This was supposed to produce the Zedoaries of the druggists: and Fée continues to refer them to it. But it is clear that Zedoary is produced by Curcuma Zedoaria; see No. 1186, and *Roxb. fl.ind.* i. 17. and 24.

AMOMUM.

Inner limb of the corolla 1-lipped. Filament dilated beyond the anther, with an entire or lobed crest. Capsule often berried, 3-celled, 3-valved. Seeds numerous, arillate. — Herbaceous perennials, with articulated creeping rhizomata. Leaves in 2 rows, membranous, with their sheaths slit. Inflorescence spiked, loosely imbricated, radical. *Blume.*

1194. A. Cardamomum *Linn. sp. pl.* 2. *Roxb. fl. ind.* i. 37. *N. and E. handb.* i. 248. *pl. med.* t. 64. — (*Rumph.*v. t. 65. f. 1.) — Mountainous parts of Java, Sumatra, &c.; commonly cultivated in gardens in India.

Rhizoma creeping under the surface of the soil, like that of ginger, but smaller, less fleshy, more ligneous and white; from which descend, and spread, many fleshy fibres. Stems rising obliquely to the height of from 2 to 4 feet, clothed with the smooth deep green sheaths of the leaves. Leaves alternate, bifarious, connected by short petioles with their smooth stem-clasping sheaths; lanceolate, entire and smooth on both sides, tapering into a long, and very fine point, from 6 to 12 inches long. Spikes radical, sessile, oblong, appearing amongst the stems, half-immersed in the earth, loosely imbricated, with 1-flowered lanceolate, acute, villous, nerved, scarious, ash-coloured bracts. Bracteolæ striated downy, scarious, 2-toothed, tubular. Flowers opening in succession, and not very conspicuous. Calyx clavate, tubular, downy, 3-toothed, the length of the tube of the corolla. Tube of the corolla slender and slightly incurved; the outer series of 3 nearly equal pellucid divisions; the lip, or inner series, rather longer than the exterior, somewhat 3-lobed, with a crenate, curled margin; its middle lobe yellow, with two rosy lines leading up to it from the mouth of the tube. Filament scarcely half so long as the limb of the corolla, incurved over the mouth of the tube. Anther double, large, fleshy, with a large

3-lobed concave crest. Ovary downy, crowned with the 2 sterile stamens which in this species are short and truncated. Capsules sessile, size of a black currant, globular, somewhat depressed. Seeds roundish, angular, dotted, brown. — Seeds agreeably aromatic, used by the Malays as a substitute for the true Cardamoms of Malabar, the produce of Elettaria Cardamomum. Fruit said by Nees and Ebermaier to be the round Cardamoms of the shops. According to Smith it is the Amomum verum of the old apothecaries. *Rees cycl. suppl.*

1195. A. angustifolium *Sonnerat. it.* ii. t. 137. *Roxb. fl. ind.* i. 39. *Smith in Rees cycl. suppl.* — Madagascar, in marshy ground; cultivated in the Mauritius.

Rhizoma horizontal, emitting strong fleshy fibres. Stems 6–10 feet high. Leaves lanceolate, much acuminated, 12–18 inches long, 4–6 inches broad. Scape radical, 6–12 inches long, closely imbricated with mucronate sheathing scales. Spikes linear-oblong, size of the thumb, imbricated with scales like those of the stem, but the inner more deeply coloured. Flowers pretty large, with a strong spicy fragrance. Calyx deep blood red, obscurely 3-toothed, slit. Tube of corolla clavate, length of bracts; outer series red, consisting of one large erect concave segment which covers the anther and stigma, and of two inferior very narrow segments. Lip obovate wedge-shaped, 3-lobed, yellow, about as long as the outer limb. Capsule ovate, pointed, striated. Seeds globular, abrupt at the base. — Every part when bruised or wounded diffuses a strong but pleasant aromatic smell. The fruit is the *Cardamomum majus* of old authors, the great or Madagascar Cardamom of Smith. The seeds are said by the latter author to have none of the vehement hot acrid taste of Grains of Paradise, Amomum Grana Paradisi, No. 1197.

1196. A. aromaticum *Roxb. fl. ind.* i. 45. — Valleys on the eastern frontier of Bengal.

Rhizoma running for a small extent under the surface of the soil. Stems in tufts, erect, from 2 to 3 feet high, and lasting from 1 to 2 years. Leaves bifarious, lanceolate, acuminate, smooth; from 10 to 12 inches long, and from 2 to 4 broad. Spikes radical, imbricated, at first clavate, afterwards becoming roundish as the fruit advances. Scape from 1 to 3 inches long, hid under the surface of the earth, and embraced by numerous imbricated sheathing scales. Flowers of a middling size, pale yellow. Bracts 1-flowered, oblong, concave, smooth. Calyx cylindrical, entire or toothed, villous. Corolla with a long, slender tube; segments of the outer series somewhat lanceolate, obtuse, the upper one rather vaulted over the stamina, and stigma. Lip nearly round, and undivided, tinged with red down the middle; sterile stamens altogether absent. Filament linear, incurved. Anther crowned with a 3-lobed crest. Ovary villous, 3-celled, with many ovules in each, attached to the axis. Capsule ovate, size of a large nutmeg, rather fleshy; surface somewhat rugose, 3-valved, 3-celled. Seeds several in each cell; oval, and obovate are the most prevailing forms. — Fruit similar in quality to Cardamoms, for which it is sold to the druggists of India; the seeds are similar in their shape and spicy flavour.

1197. A. Grana Paradisi *Linn. sp. plant.* 2. *Smith in Rees Cyclop. suppl. N. and E. handb.* i. 249. *plant. med.* t. 65. —

Guinea, near Sierra Leone. (Melligetta or Malagueta Pepper. *Offic.*)

Rhizoma perennial, woody, creeping horizontally. Stems erect, simple, slender, 3 feet high, leafy, but destitute of flowers. Leaves numerous, crowded, 2-ranked, alternate, a span long and an inch broad, lanceolate, or slightly ovate, with a long taper point, entire, smooth, single-ribbed, striated with innumerable oblique veins. Their flavour is slightly aromatic, after having been dried twenty years. Flower-stalks radical, solitary, an inch or two in length, ascending, clothed with numerous, close, sheathing bracteas, all abrupt, ribbed, somewhat hairy and fringed; the lower ones very short; the upper gradually much longer. Of the parts of the flower nothing can be made out from our specimens. Capsule 1½ inch long, ½ an inch in diameter, oblong, bluntly triangular, scarcely ovate, beaked, of a dark reddish-brown, ribbed, coriaceous, rough with minute deciduous bristly hairs. When broken it is very powerfully aromatic, even after being kept twenty years, with a peculiar pepper-like flavour, rather too strong to be agreeable. Seeds numerous, enveloped in membranes formed of the dried pulp, roundish or somewhat angular, of a shining golden brown, minutely rough or granulated, extremely aromatic, hot and acrid. *Smith.* — Properties of the seeds the same as those of other Amoma; they are powerfully aromatic, stimulant and cordial.

1198. A. grandiflorum *Smith Exot. Bot.* 2. t. 111. *Rees Cyclop. suppl.* No. 6. — Sierra Leone.

Ligula cloven, smooth. Spikes capitate. Bracts elliptical, shorter than the fruit; lower ones distant. Intermediate lobe of filament entire. Capsule oblong, bluntly triangular, minutely hispid. Seeds ovate. — Seeds differ from those of A. grana paradisi in being grey or lead-coloured, much less polished, with a totally different flavour, resembling that of camphor, which they equal in warmth and pungency. As a stimulant or cordial, these seeds appear equal to any Cardamoms whatever. *Smith.*

ELETTARIA.

The character the same as that of Amomum but the tube of the corolla filiform and the anther naked. *Blume.*

1199. E. Cardamomum *Maton in act. linn.* x. 254. *Blume enum.* i. 51. *N. and E. handb.* i. 250. *pl. med.* t. 66. — Amomum repens *Sonnerat it.* ii. 240. t. 136. Amomum Cardamomum *White in act. linn.* x. 230. t. 4. 5. Alpinia repens *Smith in act. linn.* viii. 353. Alpinia Cardamomum *Rosc. monandr. pl.* 38. *Roxb. fl. ind.* i. 70. (*Rheede mal.* xi. t. 4 and 5.) — Mountainous parts of the coast of Malabar. (True Cardamom.)

Rhizoma with numerous fleshy fibres. Stems perennial, erect, smooth, jointed, enveloped in the spongy sheaths of the leaves; from 6 to 9 feet high. Leaves bifarious, subsessile on their sheaths, lanceolate, fine-pointed, somewhat villous above, sericeous underneath, entire, from 1 to 2 feet long. Sheaths slightly villous, with a rounded ligula rising above the mouth. Scapes several (3 or 4) from the base of the stems, prostrate, flexuose, jointed, branched, from 1 to 2 feet long. Branches or racemes alternate, one from each joint of the scape, sub-

erect, 2 or 3 inches long. Bracts solitary, oblong, smooth, membranous, striated, sheathing, 1 at each joint of the scape. Flowers alternae, short-stalked, solitary at each joint of the racemes, opening in succession as the racemes lengthen. Calyx funnel-shaped, 3-toothed at the mouth, about $\frac{3}{4}$ of an inch long, striated with fine veins, permanent. Tube of corolla slender, as long as the calyx; limb double, exterior of 3, oblong, concave, nearly equal, pale greenish-white divisions; inner lip obovate, much longer than the exterior divisions, somewhat curled at the edge, with the apex slightly 3-lobed, marked chiefly in the centre, with purple violet stripes. Filament short, erect. Anther double, emarginate. Ovary oval, smooth. Style slender. Stigma funnel-shaped. Capsule oval, somewhat 3-sided, size of a small nutmeg, 3-celled, 3-valved. Seeds coriaceous and pale-brown, many, blackish. — The seeds are gratefully aromatic and pungent with a flavour of camphor, and are esteemed more agreeable and useful in food and medicine than any others of this natural order. They are reckoned carminative and stomachic, and are employed very generally to give warmth to other medicines. According to Mr. White they are "one of the most valuable articles of modern luxury, regarded as a necessary of life by most of the inhabitants of Asia, a grateful and salubrious accessory of diet, &c." They enter into a considerable number of pharmaceutical compounds, as adjuvants, but the only preparation that derives its name from them is the *Tinctura cardamomi composita*. *Pereira.*

1200. E. Cardamomum medium *N. and E. handb.* i. 252. — Alpinia Cardamomum medium *Roxb. fl. ind.* i. 74. — Hilly country in the neighbourhood of Sylhet where the plant is called Do-Keswa.

Leaves stalked above their sheaths, linear-lanceolate, downy underneath, from 2 to 3 feet long, by 2 to 4 inches broad; sheaths villous, ending in an obtuse ligula above the insertion of the leaf. Spikes radical, oblong, laxly imbricated, rising but little above the earth; lower part hid in the soil, and clothed with shorter scariose scales. Flowers numerous, large, red, fragrant. Bracts lanceolate, ribbed, smooth, yellowish-pink. Calyx length of the tube of the corolla, tubular, with a 3-toothed coloured apex. Tube of corolla cylindrical, long and slender; its segments linear-oblong, obtuse. Lip with a pretty broad cordate base, from thence tapering to its entire obtuse point, much longer than the segment of the exterior border; margin curled. Capsules on rather long pedicels, ovate-oblong, while fresh above $1\frac{1}{2}$ inch long, and nearly 1 in diameter, somewhat 3-lobed, each angle marked with a larger vertical wing, and 2 smaller on the flatter sides, between the large ones, 3-celled. Seeds numerous, obovate with a groove on one side.—The form of the capsule and the acrid aromatic taste of the seeds induce me to conclude that this is the plant which produces the *Cardamomum medium* of writers on Materia Medica. *Roxb.* Mr. Pereira finds in the shops a cardamom called *Semina Cardamomi majora*, or *wild Cardamoms* from Calcutta which he thinks may belong to this species.

ALPINIA.

Tube of corolla short; inner limb 1-lipped, either toothless or

furnished with a small tooth at the base on each side. Filament linear, scarcely prolonged beyond the emarginate anther. Capsule berried, 3-celled. Seeds few or numerous, arilled. — Plants with thick tuberous horizontal roots. Stems many, perennial. Leaves bifarious, lanceolate, with a slit ligulate sheath. Inflorescence panicled, or in loose racemes or spikes, terminal. *Blume.*

1201. A. Galanga *Swartz. obs. bot.* 8. *Rosc. in Linn. trans.* viii. 345. *Roxb. fl. ind.* i. 59. *N. and E. handb.* i. 255. * — (*Rumph.* v. t. 63.) — Sumatra; cultivated in the Indian Archipelago.

Tubers faintly aromatic, strongly pungent, like a mixture of pepper and ginger, accompanied with some degree of bitterness. Stems perennial, or at least more durable than those of herbaceous plants, nearly erect, round, smooth, about 6 or 7 feet high when in flower, and as thick as a slender walking-cane, invested with leafless sheaths up to the middle. Leaves short-stalked, bifarious, lanceolate, white, and somewhat callous at the margin, smooth, from 12 to 24 inches long, and from 4 to 6 broad; ligula short, rounded, ciliate. Panicle terminal, erect, oblong, spreading, dichotomous; each division with from 2 to 6 pale, greenish, somewhat fragrant flowers. Calyx smooth, white, scarcely the length of the corolla, 1-toothed. Corolla; exterior limb of 3, nearly equal, linear, recurved, smooth, pale, greenish divisions; inner, unguiculate, somewhat ascending, so as nearly to meet the slightly declining anther, oval or ovate-oblong, concave, deeply 2-lobed, minutely laciniate, white, with here and there a small reddish speck; 2 recurved, fleshy, coloured teeth at the base of the claw. Filament rather longer than the claw. Apex of anther deeply emarginate, projecting horizontally over the middle of the lip. Ovary smooth, oval, 3-sided, 3-celled, with 2 ovules in each cell attached to the middle of the dissepiment. Style filiform. Stigma funnel-shaped, fringed: capsule the size of a small cherry, obovate, smooth, deep orange-red, 3-celled, indehiscent, externally fatiscent. Seed 1, rarely 2 in each cell, much compressed, deep chesnut-colour, wrinkled, the size of a grain of black pepper. Aril enveloping the whole seed except the apex, thin, rather foliaceous, dull white. Testa thick, hard, spongy internally. Albumen white, friable, and very hard. Embryo simple, dull white, roundish, in the body of the albumen, and with the narrow, conical radicle passing through it, and pointing to the hilum. — The roots are the *Galanga major* of the druggists, a pungent acrid aromatic, forming a kind of substitute for ginger.

1202. Besides the larger Galanga, there is a Galanga minor which according to Fée is very much smaller and has more energetic properties than the former and which comes from China and the Philippines. It is not known what plant produces it.

1203. Renealmia exaltata *Linn. suppl.* 7. — Alpinia exaltata *Meyer esseq.* 4. A. tubulata *Bot. Reg.* t. 777. A plant supposed to be at least related to this, if not identical, and called

* The plant figured in Nees v. Esenbeck's medical plants as A. Galanga, is said by Dr. Blume to be Alpinia pyramidata.

Corowatti in British Guayana is spoken of by Dr. Hancock (*Med. gaz.* xix. 718), as a bitterish pungent subacrid plant, acting as a diaphoretic and diuretic, or in large doses as an emetic, and of great value in dropsies, rheumatism, dysentery, hooping-cough, &c. The bruised rhizoma is the part used.

MARANTACEÆ.

Nat. syst. ed. 2. *p.* 324.

MARANTA.

Corolla unequal, one of the inner segments in the form of a lip. Stamens petaloid, 1 with half an anther on its edge. Style hooded, adhering to the edge of a sterile filament. Ovary 3-celled, smooth; ovules solitary. Fruit even, dry, 1-seeded. — Caulescent plants with fleshy rhizomata or tubers. Stems branched, often dichotomous. Inflorescence terminal, panicled, jointed, with glumaceous deciduous bracts.

1204. M. arundinacea *Linn. sp. pl.* 2. *Redout. Liliac.* t. 57. *N. and E. handb.* i. 235. *pl. med.* tt. 69, 70. *Fée cours.* i. 359. — M. indica *Tussac journ. bot.* iii. 41. *N. and E. handb.* i. 236. — West Indies; introduced to Jamaica from Barbadoes.

Root perennial, fibrous, producing numerous fusiform fleshy scaly pendulous tubers from its crown. Stem 2–3 feet high, much branched, slender, finely hairy, tumid at the joints. Leaves alternate, with long leafy hairy sheaths, ovate, lanceolate, slightly hairy underneath, pale green on both sides. Panicles terminal, lax, spreading, with long linear sheathing bracts at the ramifications. Ovary hairy. Calyx green, smooth. Corolla white, small. Fruit nearly globular, with 3 obsolete angles, the size of a small currant. — The tubers yield the Arrow root of commerce, one of the lightest and most nutritious of vegetable aliments. It was reckoned a powerful alexipharmic, and derives its English name from its reputed property of counteracting the effects of poisoned arrows.

CANNA.

Corolla unequal, variable in the number of its parts, scarcely lip-shaped in any segment. Stamens petaloid, 1 with half an anther on the edge. Style straight flat, nearly free. Ovary 3-celled, many-seeded, granular. Fruit membranous, 3-valved, with a deciduous granular surface. — Rhizomas creeping, tuberous or wanting. Stems erect, with distant sheathing leaves. Inflorescence terminal spiked or racemose. Flowers invested with glumaceous bracts.

1205. C. edulis *Ker. in Bot. Reg.* ix. 775. — Peru, where it is called Achiras.

Tubers thick, fleshy, with oblong cylindrical fangs. Stems deep red, 5–6 feet high. Leaves ovate and oblong, tapering to each end, smooth, a deep glaucous green with a purplish edge. Raceme compact, few flowered. Bracts obovate, obtuse, pink-coloured, about as long as the ovary. Sepals ovate, pink. Corolla with the outer segments linear-lanceolate, erect; 2 of the inner narrow oblong emarginate crimson erect, and the other yellowish revolute and notched at the point. — The fleshy tubers are eaten in Peru as Potatoes, and contain a large quantity of starch resembling Arrow root.

1206. The fæcula of another Canna, called *C. coccinea*, has been advertised for sale under the name of "tous les mois" as an excellent sort of Arrow root. (See Morning Chronicle, Aug. 4. 1837.) It is however very doubtful whether it is really produced by the Canna coccinea of Botanists.

AMARYLLIDACEÆ.

Nat. syst. ed. 2. *p.* 328.

CRINUM.

Perianth tubular, long, with a spreading or reflexed equal limb. Stamens 6, spreading or declinate, inserted into the orifice of the tube. Ovules hardly separable from their fleshy placentæ. Capsule membranous, bursting irregularly. Seeds globose, with a fleshy testa, giving them the appearance of small tubers.

1207. C. asiaticum *Roxb. fl. ind.* ii. 128. *Herbert amaryll.* p. 243. — C. toxicarium *Roxb. fl. ind.* ii. 135. Radix toxicaria *Rumph.* — East Indies.

Bulb with a terminal, stoloniferous, fusiform portion issuing from the crown of the bulb, descending deep into the mud or earth; from the last-mentioned portion proceed the ramous fibrous roots. Stem 0. Leaves radical, equally disposed on every side, linear, concave (so much so that a section forms nearly a perfect semicircle); margins smooth; length from 1 to 3 feet, and where broadest, little more than $\frac{3}{4}$ of an inch. Scapes generally shorter than the longer leaves, a little compressed, smooth, often coloured. Umbels with from 6 to 16 flowers. Spathe 2-leaved, with filiform bracts amongst the flowers. Flowers large, white, subsessile, fragrant during the night. Tube cylindrical from 4 to 6 inches long, coloured, or pale-green, according to exposure, smooth. Divisions of the limb linear-lanceolate, equally disposed; margins waved a little; a recurved process at the apex of each. Filaments equally disposed, ascending, upper half coloured; anthers linear, incumbent. Ovary inferior; style as long as the stamens, declinate; stigma simple. Fruit membranaceous, subglobose, containing in one cell 1 or 2 rugose, bulb-like seeds, and although the flowers are subsessile, the capsules are on short stalks. *Roxb.* — The bulbs are powerfully emetic; they are used to produce violent vomiting in cases of poisoning by the Antiaris. *Rumphia* i. 55.

1208. Oporanthus luteus *Herbert* is said to have purgative bulbs.

BRUNSVIGIA.

Perianth tubular, with a spreading equal or unequal 6-parted limb. Stamens 6, inserted into the bottom of the tube, erect, or somewhat declinate. Capsule membranous, triangular, or almost 3-lobed, with the angles sometimes winged, bursting into 3 valves through the cells. Seeds few, oblong, black, often fleshy.

1209. B. toxicaria *Ker. Bot. Reg. fol.* 139. and t. 567. — Hæmanthus toxicarius *Hort. Kew.* i. 405. Buphane toxicaria *Herbert amar.* 239. Amaryllis disticha *Linn. suppl.* 195. — Cape of Good Hope.

Bulbs ovate-oblong with innumerable, thin, fibrous coatings. Leaves in 2 rows, numerous, erect and diverging, strap-shaped, oblique, glaucous, smooth at the edge. Scape appearing before the leaves, somewhat compressed, glaucous, bearing an umbel of 200–300 pink flowers, which are much longer than the reflexed spathes. Perianth $1\frac{1}{4}$ inch long, funnel-shaped, revolute, regular. Stamens much longer than the perianth, spreading. Ovary 3-cornered, with tumid angles. — The viscid juice of the bulbs is a dangerous poison. It is one of the ingredients used by the Bushmen to envenom their arrows, and is supposed to add most powerfully to the activity of the poison.

NARCISSUS.

Perianth hypocrateriform, with a spreading, 6-parted, regular limb, and an undivided or lobed cup terminating the tube. Stamens 6, inserted into the tube in 2 rows below the top of the tube. Ovules numerous, horizontal. Capsule membranous, bursting into 3 valves through the cells. Seeds roundish, with a dark shrivelled coat.

1210. N. poeticus *Linn. sp. pl.* 414. *E. Bot.* t. 275. *Smith Eng. Fl.* ii. 131. — Dry Fields in various parts of Europe.

Bulb ovate, with a dark-brown skin. Leaves 12 to 18 inches long, nearly erect, $\frac{1}{2}$ an inch broad, of a rather glaucous deep green, rounded and obtuse underneath; their edges acute, recurved; the disk slightly concave, striated with numerous longitudinal veins. Stem about as tall as the leaves, straight, hollow, 2-edged; rounded at the sides. Bractea brown and dry, cloven, rather longer than the partial stalk. Flower large and very beautiful, powerfully fragrant. Petals pure white. Nectary with a very shallow yellow cup, the border white internally; of a beautiful crimson next; and at the extreme edge brownish, filmy, and minutely crenate. *Smith.* — The bulbs have considerable energy as emetics. They are administered occasionally, on the continent in doses of 5–10 grains to produce nausea, and of 30 grains as an emetic. In the form of extract this and other species have been regarded almost as a specific in cases of hooping-cough, in doses of 2 or 3 grains, but although the extract appears sometimes to act with surprising rapidity, effecting a cure in 5 or 6 days, yet it frequently fails, and is thought to be less efficacious than Belladonna. In doses of 2–3 drachms the extract is a deadly poison.

1211. N. Pseudo-narcissus *Linn. sp.* 414. *E. Bot.* t. 17. *Smith Eng. Fl.* ii. 132. — Common in woods and thickets all over the north of Europe. (Daffodil.)

Bulb nearly globular, with a blackish coat. Leaves several, erect, about a foot high, rather glaucous, with a blunt keel and flat edges. Bractea close to the base of the ovary, undivided. Flowers large, a little drooping, unpleasantly scented. Petals pale yellow, nearly erect, longer than the tube of the cup, which is funnel-shaped, and almost as

long as its deep yellow, crisped and crenate, somewhat angular, border. Stamens from or near the bottom of the tube, shorter than the cup. Anthers oblong, converging. Ovary globose, with 3 furrows. *Smith.* — Has properties similar to those of *N. poeticus.* The flowers are said to be emetic.

1212. N. Tazzetta *Linn.* 1212 *a.* N. odorus *Linn.* and probably many other species have similar properties.

1213. Pancratium maritimum *Linn.* is reported to be emetic.

1214. Alstrœmeria Salsilla *Linn.* is said to be diuretic and diaphoretic.

1215. Alstromeria edulis *Tussac,* furnishes tubers filled with a nutritious fœcula.

IRIDACEÆ.

Nat. syst. ed. 2. p. 332.

IRIS.

Perianth tubular, with a petaloid membranous limb; the sepaline segments revolute, often bearded, the petaline erect and converging. Stamens 3, concealed beneath the lobes of the style. Style 3-parted near the upper end, with petaloid segments, overarching the anthers, and bearing a two-lipped transverse stigma below their ends. Capsule 3-celled, bursting through the cells into 3 valves, coriaceous, with numerous flat or round and fleshy seeds.

1216. I. versicolor *Linn. sp. pl.* 57. *Bot. mag.* t. 21. *Bigelow med bot.* i. t. 16. — Swamps and wet meadows in the United States. (Blue flag.)

Rhizoma fleshy, horizontal. Stem 2 or 3 feet high, round on one side, acute on the other, frequently branched, and bearing from 2 to 6 flowers. Leaves sword-shaped, striated, sheathing at base. Bracts scarious. Peduncles of various lengths, flattened on the inside. Ovary 3-cornered, with flat sides, and obtuse angles. Sepals spathulate, beardless, the border purple, the claw variegated with green, yellow and white, and veined with purple. Petals erect, varying in shape from spathulate to lanceolate, usually paler than the outer, entire or emarginate. Stigmas 3, petaloid, purple or violet, bifid, crenate, and more or less reflexed at the point. Stamens concealed under the stigmas, with oblong-linear anthers. Capsule 3-celled, 3-valved; when ripe, oblong, turgid, 3-sided, with roundish angles. Seeds numerous, flat.— Rhizoma nauseous, and acrid; it is an active cathartic, but is apt to produce a distressing nausea like sea-sickness, with a prostration of strength. Most useful as a diuretic. *Bigelow.*

1217. I. Pseud-acorus *Linn. sp.* 56. *E. Bot.* t. 578. *Woodv.* t. 40. *Smith Eng. Fl.* i. 49.—Common in ditches and wet places all over Europe.

Rhizoma horizontal, depressed, brown, very astringent. Stem 3 or 4 feet high. Leaves erect, sword-shaped, ribbed, grass-green. Flowers from 3 to 6, large, handsome, light yellow, beardless. Sepals pencilled on the disk with dark purple. Petals smaller than the lobes of the style. Seeds angular. — The rhizoma is acrid and possesses purgative and emetic properties.

1218. I. florentina *Linn. sp. pl.* 55. *Bot. Mag.* t. 671. *Fl. græc.* t. 39. — Southern parts of Europe and the islands of the Mediterranean.

Rhizoma horizontal, knotty, very fragrant. Stem 1–1½ foot high. Leaves about a foot long, broad, somewhat falcate, but little waved at

the edge, glaucous, shorter than the stem. Flowers large, fragrant, pale bluish white, bearded; their tube scarcely so long as the ovary. Petals full 2 inches long, and 1 inch broad, obtuse, somewhat converging, reflexed at the edge, rather plaited towards the base. — The dried rhizoma is the Orris root of the shops, a subacrid, aromatic, rather bitter substance, employed in the manufacture of tooth-powder and hair powder, and to keep up the discharge from issues.

CROCUS.

Perianth funnel-shaped, expanding only in the sunshine, with a very long tube, and a regular 6-parted limb. Stamens 3, inserted into the tube; anthers sagittate. Style filiform with 3 long narrow plaited stigmas, which are usually dilated and jagged at the apex. Capsule 3-celled, many-seeded. Seeds roundish.

1219. C. sativus *Linn. sp. pl.* 50. *Woodv.* t. 176. *Smith Eng. Fl.* i. 46. — C. autumnalis *Eng. Bot.* t. 343. — In the East of Europe flowering in the autumn. (Saffron Crocus.)

Cormus roundish; the integuments consisting of parallel fibres, which are distinct at the upper end. Leaves very narrow, linear, long, flaccid, surrounded at the base with long membranous sheaths. Flowers axillary, with a 2-valved membranous spathe, appearing with the leaves, large, purple, striated, with a campanulate limb. Stigmas 3, deeply divided, linear-wedge-shaped, deep orange-colour, hanging down on one side of the flower, fragrant, notched at the points. — The dried stigmas are the *Saffron* of the shops. In moderate doses this substance stimulates the stomach, and in large quantities excites the vascular system. Moreover it seems to have a specific influence on the cerebro-spinal system, as it affects, it is said, the mental faculties, a result which De Candolle considers analogous to that produced by the petals of certain odorous flowers. "In modern practice it is little used, except as a colouring ingredient; on the Continent it is employed as an agreeable stimulant in many culinary preparations and liqueurs. In a medicinal point of view it is frequently used to assist the eruption of exanthematous diseases; on the same principle I fancy that Birdfanciers give it to birds in the moult. It has been used as a carminative, antispasmodic and emmenagogue." *Pereira.* The singular substance called *Polychroite* is obtained from Saffron.

1220. C. odorus *Biv. stirp. rar.* iii. p. 8. t. 2. *Gusson. fl. sic.* i. 30. *ic.* t. 11. f. 2. — Open pastures in both mountainous and maritime situations in Sicily, flowering from October to December.

Integuments of the cormus fibrous. Leaves appearing with the flowers, linear, channelled, revolute at the edge. Spathe single, acute. Flowers purple, sweet-scented, with a very long tube. Style trifid, not hanging out of the flower, about as long as the stamens, with the segments multifid at the apex. — This yields Saffron in Sicily according to Gussone.

ORCHIDACEÆ.

Nat. syst. ed. 2. p. 335.

ORCHIS.

Flowers galeate. Sepals nearly equal; the upper converging with the petals into a sort of arch; the lateral either converging or reflexed. Petals erect, of about the same size and form as the upper sepal. Labellum anterior, calcarate, entire, or undivided, connate with the base of the column. Anther erect with contiguous parallel cells. Pollen-masses granular, with 2 distinct glands enclosed in 1 common pouch (or pouch-like fold of the stigma). — Terrestrial plants with tubercular roots, and soft rather flaccid even leaves.

It is believed that some species of this genus furnishes the nutritious substance called Salep, or Saloop, so remarkable as the source of Bassorine, and 1221. *O. mascula* in particular has been named as the plant whose tubercles are collected; but as that plant does not seem to grow in Turkey or Persia, the countries whence Salep was originally obtained, there must be some mistake in the statement. It is more likely to be the produce of 1222. *O. variegata*, 1223. *taurica*, or 1224. *militaris*. In the Himalayas the tubercles of an Orchis were seen by Lieut. Hutton to be collected for use under the name of *Salep misri*, but the species is not mentioned.

BLETIA.

Sepals spreading, equal. Petals spreading or converging, about the same size as the sepals. Labellum cucullate, articulated with the column, sometimes saccate at the base, 3-lobed, with the disk generally lamellate or tuberculated. Column long, half-terete. Anther fleshy, 8-celled, terminal, opercular. Pollen-masses 8, equal, waxy, adhering by 4 powdery straps. — Terrestrial plants, with cormi and plaited leaves.

1225. B. verecunda *RBr. in hort. kew.* v. 206. *Lindl. g. and sp. orch.* 121. — Limodorum altum *Linn. syst. veg.* 680. *Jacq. ic. rar.* iii. t. 602. — West Indies.

Leaves ensiform, plaited. Scape branched, erect, 2–3 feet high. Flowers bright purple, showy. Sepals ovate, acute, somewhat spreading. Petals oblong, obtuse, arched over the column. Lip with the middle lobe broader than long and wavy, with numerous crisp, parallel, simple or occasionally branched ridges of a pale yellow or whitish colour. — According to Browne the cormus is "bitterish and attended by a clamminess that leaves a light prickly warmth behind it; but this wears off soon, leaving the palate free from every sensation but that of the bitter. When dried it may be used with great propriety as a stomachic."

EPIDENDRUM.

Sepals spreading or converging, about equal. Petals equal to the sepals, or narrower, rarely broader, spreading or reflexed. Labellum more or less united with the column and parallel with it, sometimes extended at the base into a spur connate with the ovary. Column long, with the clinandrium margined, fringed or even cucullate. Anther terminal, opercular, fleshy. Pollen-masses 4, waxy, with the same number of replicate straps. — American epiphytes, inhabiting the tropics.

1226. E. bifidum *Aubl. guian.* ii. 824. *Swartz. fl. ind. occ.* iii. 1489. *Bot. Reg.* t. 1879. *Lindl. gen. and sp. Orch.* 100. — Various West India islands, and Guayana.

Stems short, oblong, fluted, covered by the sheaths of rudimentary leaves. Leaves about 3 on each stem, coriaceous, lanceolate-oblong, obtuse. Scape branching, about 3 feet high. Sepals and petals spreading, obovate-lanceolate, pale green, spotted with purple towards the ends. Lip 3-lobed, only partially united to the column; the lateral lobes rounded, erect, bright yellow, the lateral larger, purple, dilated at the apex, bifid, with the sides rounded and rather recurved; on the disk having a double crenated appendage which terminates in a long callous ridge almost reaching the sinus of the middle lobe. Column pure white, clavate. — According to Mr. Schomburgk the expressed juice is a purgative, taken in doses of a table spoonful at a time; it is also reckoned in Tortola an anthelmintic, and diuretic, &c. *Linnæa*, ix. 512

EULOPHIA.

Perianth spread open. Sepals and petals ascending, nearly equal, either quite distinct, or united with the more or less lengthened base of the column. Lip horned, or shortly spurred, sessile, with the veins crested, bearded, or quite smooth; usually 3-lobed, sometimes undivided. Column half terete, edged. Anther terminal, opercular. Pollen-masses 2, waxy, 2-lobed or hollowed out at the back, with a short linear caudicula and a transverse gland. — Terrestrial plants with pseudo-bulbous rhizomata, long membranous plaited leaves and radical many-flowered scapes.

1227. It appears from the evidence of Professor Royle that the plant which yields *Salep* in Cachmere belongs to the present genus; but the specimens obtained by that indefatigable traveller were not sufficient to enable the species to be ascertained.

VANILLACEÆ.

Nat. syst. ed. 2. p. 341.

VANILLA.

Sepals spreading or erect, distinct. Petals of a similar form and texture. Labellum connate with the columa, crested, membranous, convolute, undivided. Anther terminal, opercular. Pollen granular. Fruit a fleshy pod. Seeds round, destitute of a loose tunic. — Climbing plants, with a slender stem, emitting numerous simple roots.

1228. V. claviculata *Swartz. fl. ind. occ.* 1515. — Epidendrum claviculatum *Swartz. prodr.* 120. (*Sloane* t. 224. f. 3, 4.) — Woods in the West Indies in mountainous, calcareous, very dry places. (Greenwithe.)

Stem climbing, 20–30 feet long, somewhat branched, producing tendril-like, simple, short roots opposite the leaves. Leaves sessile, semiamplexicaul, somewhat sheathing, an inch long, lanceolate, acuminate, concave, recurved near the point, membranous at the edge. Peduncles thick, flexuose, many-flowered, axillary. Flowers large, white. Sepals ovate-lanceolate, obtuse, concave; petals of the same form, carinate, from erect spreading, somewhat fleshy, brittle. Labellum with a hairy, ciliated, ramentaceous furrow, undulated at the edge, convolute and obtuse at the point. Fruit large, roundish triangular, oblong, tapering to the base, smooth. — A decoction is esteemed by the negroes an excellent remedy for syphilis. The expressed juice is also used in cases of recent wounds, whence the French in St. Domingo call it *Liane à blessure*. Swartz.

PALMACEÆ.

Nat. syst. ed. 2. *p.* 343.

SAGUS.

Leaves pinnated. Flowers monœcious. ♂ Calyx 3-toothed. Petals 3. Stamens 6–12, with distinct compressed filaments. ♀ Calyx 3-toothed. Corolla campanulate, 3-fid. Cup of stamens 6-toothed, with abortive sagittate anthers. Ovary 3-celled. Stigmas 3, subulate, connate. Fruit 1-seeded, coated by a mail of reversed scales. Albumen ruminated. Embryo dorsal, upon an umbilical pit.

1229. S. lævis *Jack in Comp. Bot. Mag.* i. 266. — Common in Sumatra and Molucca. (Rambiya *Malay.*)

The stem which is about as thick as that of the Cocoa-nut tree, is annulated by the vestiges of the fallen leaves, and the upper part is commonly invested with their withered sheaths. The leaves resemble those of the Cocoa-nut, but grow more erect, and are much more persistent, so the foliage has not the same tufted appearance, but has more of the graceful ascending curve of that of the Saguerus Rumphii: they are pinnate, unarmed; the leaflets linear, acute, carinate, and smooth. The tree is from 15 to 20 years in coming to maturity, the fructification then appears, and it soon after decays and dies. The inflorescence is terminal; several spadices rise from the summit of the stem, enveloped in sheaths at their joints, and alternately branched. It is on these branches that the flowers and fruit are produced, and they are generally from 5 to 8 inches in length. They are of a brown colour, and closely imbricated with broad scariose scales, within which is a quantity of dense ferruginous wool in which the minute flowers are imbedded and completely concealed. Each scale supports 2 flowers, which are hermaphrodite, and scarcely larger than a grain of turnip-seed. The perianth has 6 leaves, of which 3 are interior, the leaflets nearly equal. Stamina 6; filaments very short; anthers oblong, 2-celled. Ovaries 3, connected together in the middle, each monosporous. Style 0. Stigma small. Fruit single, nearly globular, somewhat depressed at the summit, but with a short, acute mucro or point in the centre; it is covered with scales which are imbricated from the top to the bottom, and are shining, of a greenish straw-colour, of a rhomboidal shape, and with a longitudinal furrow down their middle. Below the scales the rind is of a spongy consistence, and the fruit contains a single seed of rather an irregular shape, and having the umbilicus situated laterally a little above the base of the fruit. The progress of the fruit to maturity is very slow, and is said, according to the best information I can obtain, to occupy about 3 years from the first appearing of the spadices to the final ripening of the fruit. During the period of inflorescence the branches of the spadix are brown, and apparently quite bare. Afterwards a number of small green knobs appear above the brown scales, which go

on enlarging till they at length acquire the size of a small apple. But few fruit come to maturity on each branch. *Jack.* — Some of the finest *Sago* of Malacca is prepared from the soft cellular substance of the trunk, before the fructification appears. It forms the principal part of the food of the natives of the Poggy islands, off the west coast of Sumatra.

1230. Sagus farinifera *Roxb. fl. ind.* iii. 624, is also found to yield Sago, but of very indifferent quality.

1231. Saguerus Rumphii *Roxb. fl. ind.* iii. 626. (Arenga saccharifera *Labill.* Anon. *Marsden,*) is said by Dr. Hamilton to produce another of the finest kinds of Sago.

CARYOTA.

Leaves pinnated. Flowers monœcious. ♂. Sepals 3, imbricated. Petals 3, valvate. Stamens numerous, with the filaments united into a very short cup. ♀. Sepals and petals each 3, convolute. Ovary 3-celled; stigmas 3, sessile, depressed, connate. Berry 2-celled, 2-seeded. Seeds plano-convex. Albumen cartilaginous, ruminated. Embryo dorsal.

1232. C. urens *Linn. fl. zeylan.* 369. *Jacq. fragm. bot.* 20. t. 12. f. 1. *Roxb. Fl. Ind.* iii. 625. — (*Rumph.* i. 64. t. 14. *Rheede* i. 15. t. 11.) — The East Indies.

Trunk straight, often 60 feet high, thick in proportion, columnar, and marked slightly with the annular cicatrices of the petioles. It grows about as fast as the cocoa-nut tree, when in a soil and situation congenial to its nature. Leaves pinnate. Leaflets sub-alternate, sessile, obliquely præmorse, the præmorse parts much jagged with sharp points. Spathe many-leaved. Spadix pendulous, from 6 to 16 feet long, branchy; branches simple, from 4 to 8 feet long, pretty thickly covered with innumerable sessile flowers, and these most regularly disposed in threes; 1 male on each side and a single female between them. Male calyx 3-leaved, cupform; leaflets unequal, concave, of a very firm texture, permanent. Petals 3, much larger than the calyx, elliptic, concave, of a firm leathery texture, green on the outside, whitish on the inside. Filaments numerous, very short. Anthers linear. Female flowers on the same spadix. Calyx and corolla as in the male. Stamens and nectarial filaments 3, between the corolla and base of the germen, each ending in a glandular enlarged apex. Ovary superior, 3-sided, Style 0. Stigma small, 2-cleft. Berry roundish, 1-celled, of the size of a nutmeg, covered with a thin, yellow, acrid bark, but nothing that deserves the name of pulp. Seed or nut generally solitary. *Roxb.* — The cellular part of the trunk yields Sago of the finest quality according to Roxburgh; palm wine is also obtained from the trunk in great abundance.

CALAMUS.

Leaves pinnated. Flowers diœcious or hermaphrodite. ♂ Calyx 3-dentate, or trifid. Corolla 3-parted, or almost 3-petaled. Stamens 6; filaments connate at base; anthers sagittate.

♀ Calyx and corolla as before. Stamens 6, rudimentary, collected into a cup. Ovary 3-celled; stigmas 3, sessile. Berry 1-seeded, covered with a mail of reversed scales. Albumen horny, with a pustular, even, or polished and ruminated surface. Embryo nearly at the base.

1233. C. Draco *Willd. sp. pl.* ii. 203. *R. and S.* vii. 1323. — (*Rumph.* v. t. 58. f. 1.) — Indian Archipelago.

Trunk while the plants are young, erect, and then resembling an elegant, slender palm tree, armed with innumerable dark coloured, flattened, elastic spines, often disposed in oblique rows, with their bases united. By age they become scandent, and overrun trees to a great extent. Leaves pinnate, their sheaths and petioles armed as above described. Leaflets single, alternate, ensiform, margins remotely armed with stiff, slender bristles, as are also the ribs; from 12 to 18 inches long and about $\frac{3}{4}$ of an inch broad. Spadix of the female hermaphrodite inserted by means of a short, armed petiole on the mouth of the sheath opposite to the leaf, oblong, decompound, resembling a common oblong panicle. Spathes several, 1 to each of the 4 or 5 primary ramifications of the spadix, lanceolate, leathery; all smooth except the exterior or lower one which is armed on the outside. Calyx turbinate, ribbed, mouth 3-toothed, by the swelling of the ovary split into 3 portions, and in this manner adhering, together with the corolla, to the ripe berries. Corolla 3-cleft; divisions ovate-lanceolate, twice as long as the calyx, permanent. Filaments 6, very broad, and inserted into the base of the corolla. Anthers filiform, and seemingly abortive. Ovary oval. Styles short. Stigma 3-cleft; divisions revolute, glandular on the inside. Berry round, pointed, of the size of a cherry. *Roxb.* — One of the resinous astringent substances called *Dragon's blood*, is obtained from this.

1234. Elais guineensis *Jacq.* yields *Palm oil.*

1235. Areca Catechu *Linn.* produces the *Betel nuts* or *Pisang* nuts which the natives of India chew for the sake of their astringent qualities. A kind of Catechu is obtained from them.

Many species besides those already named, yield a kind of Sago.

MELANTHACEÆ.

Nat. syst. ed. 2. *p.* 347.

VERATRUM.

Flowers polygamous. Perianth 6-parted; segments broad, concave, imbricating, nearly equal, striated, not excavated at the base. Stamens 6, equal, inserted into the base of the segments; filaments subulate; anthers reniform with confluent cells. Ovary with 3 divaricating stigmas. Capsule 3-horned, separating into 3 many-seeded follicles. Seeds compressed, winged at the apex.

1236. V. viride *Ait. Hort. Kew.* iii. 422. *Bigelow med. bot.* ii. t. 33. *R. and S.* vii. 1556. — Veratrum album *Mich. fl. bor. am.* ii. 249. Helonias viridis *Bot. Mag.* t. 1096. — Common in the United States in swamps and wet meadows in the spring.

Rhizoma thick and fleshy, its upper portion tunicated, its lower half solid and sending forth a multitude of large whitish roots. Stem from 3 to 5 feet high, roundish, solid, striated and pubescent, throughout the greater part of its length closely invested with the sheathing bases of the leaves. Lower leaves large, from ½ a foot to a foot long, oval, acuminate, pubescent, strongly plaited and nerved; the lower part of their edges meeting round the stem; upper leaves gradually narrower; the uppermost, or bracts, linear-lanceolate. Flowers numerous, in compound racemes axillary from the upper leaves, and terminal; the whole forming a sort of panicle. Peduncles roundish, downy. Bracts boat-shaped, acuminate, downy. Pedicels many times shorter than the bracts. Perianth divided into 6 green, oval, acute, nerved segments, of which the alternate ones are longest; all the segments contracted at base into a sort of claw with a thickened or cartilaginous edge. Stamens 6 with recurved filaments and roundish, 2-lobed anthers. Carpels 3, cohering, with acute recurved styles as long as the stamens. A part of the flowers are barren and have only the rudiments of styles, so that the plant is strictly polygamous. The seed vessel consists of 3 capsules united together, separating at top and opening on their inner side. Seeds flat, winged, imbricated. — The roots are an acrid emetic and powerful stimulant followed by sedative effects. In all respects it closely resembles Veratrum album in its properties.

1237. V. album *Linn. sp. pl.* 1479. *Mert. and Koch d. fl.* ii. 625. *Bieb. taur. cauc.* xi. 445. *Jacq. fl. austr.* t. 335. *Woodv.* t. 100. *R. and S.* vii. 1554. — Meadows in the South of Europe, from Spain to the Caucasus. (White Hellebore.)

Rhizoma somewhat horizontal, oblong, præmorse, the thickness of a finger, blackish externally, whitish internally. Stem 1½–4 feet high.

Leaves plaited, broad-ovate, acute or rather blunt. Panicle terminal. Flowers yellowish white, green at the back, 8 lines in diameter, with the divisions spreading, serrulate and slightly wavy. In other respects it is much like the last. — The rhizoma is very poisonous, acting as a local irritant. Applied to the nose it produces violent sneezing; placed in contact with the skin it causes redness and inflammation. Swallowed in small doses, as 1 or 2 grains, it is said to act as an emetic and purgative; in large quantities it causes violent vomiting, purging, and other consequences that produce death. It is rarely employed internally, except in mania and epilepsy, lepra, torpid conditions of the large intestines, gout, &c. In the form of powder it is sometimes prescribed as a sternutatory in amaurosis and affections of the brain. The *unguentum veratri* is used against the itch, and the decoction not only in skin diseases, but also to destroy pediculi.

1238. V. Sabadilla *Retz. obs.* i. 31. *Descourtilz in ann. soc. linn. par.* 1824, 167. *N. and E. pl. med.* t. 48. *R. and S.* vii. 1558. — Mexico and the West India Islands.

A plant 3 or 4 feet high. Stem erect, simple, round. Leaves numerous, spreading on the ground, all radical, ovate-oblong, obtuse, with 8–14 ribs, glaucous underneath. Panicle spreading, simple, or a little branched. Flowers rather nodding. Pedicels very short, approximated in twos and threes; those of the fertile flowers eventually becoming turned to one side, those of the sterile flowers deciduous and leaving a scar. Segments of the perianth ovate-lanceolate, veinless, blackish purple. Ovaries 3, oblong, connate, obtuse; styles acute, dilated downwards; stigmas simple. Capsules 3, in form resembling those of Larkspur, opening at the apex inside. Seeds 3 in each cell, imbricated, curved, blunt on one side, sooty, acrid. *Descourtilz.* — This furnishes one of the *Cevadilla*, *Cebadilla* or *Sabadilla* seeds of commerce, which were formerly used to destroy pediculi, and as anthelmintics; they have also been employed in chronic rheumatism and paralysis, and in neuralgic cases. They are now chiefly consumed in the manufacture of Veratria, to which they give the name. This substance is an active and dangerous local stimulant; but administered with caution it proves a valuable medicine in gout, rheumatism, anasarca, and generally as a substitute for Colchicum.

HELONIAS.

Perianth 6-parted; segments narrow, rather unequal, obtuse, not striated or herbaceous, nor imbricating. Stamens 6, inserted into the base of the segments, unequal; filaments subulate; anthers reniform with confluent cells. Capsule separating into 3 many-celled follicles. Seeds compressed, winged at the apex or wingless.

1239. H. officinalis *Don in Edinb. new phil. Journ.* Oct. 1832. p. 234. — Veratrum officinale *Schlecht. in Linn.* vi. 45.—Eastern side of the Mexican Andes, near Barranca de Tioselo, by the Hacienda de la Laguna, in grassy places.

Bulbous. Plants generally cæspitose. Leaves linear, tapering to a point, even, smooth, entire, channelled above, carinate at the back,

about 4 feet long, lax. Scape naked, the height of a man, quite simple, terminated by a raceme 1½ foot long. Perianth deeply 6-parted, spreading, yellowish, white, permanent, with linear thick obtuse segments, 3 of which are rather broader than the others. Filaments 6, somewhat clavate, yellowish, inserted into the base of the perianth, those opposite its broadest segments longer than the others, and all longer than the perianth; anthers rather large, yellow, cordate, obtuse. Ovary formed of 3 cells, united by their sutures. Fruit 3-capsular; the carpels united by their suture, but separable. Lower flowers hermaphrodite and fertile, upper male and sterile. Smell of the flowers like that of Berberis vulgaris. *Schiede.* — This was ascertained by Messrs. Schiede and Deppe to produce at least part of the *Sabadilla* seeds of the shops, the use of which has now become so general for the manufacture of Veratria. Their taste is bitter, acrid, and permanent. As there are possibly several allied species producing seeds of the same quality, I have preferred quoting the words of Dr. Schiede, to describing the plant from what I believe to be specimens of it in my possession. It is certainly not a Veratrum, to which Schiede and Deppe, Schlechtendahl and Endlicher have referred it: but I am far from asserting that it is an Helonias. It is, however, more nearly allied to that genus and accordingly it may be left for the present where Professor Don has placed it. Its seeds are the officinal part, and are used as those of Veratrum Sabadilla.

1240. H. frigida. — Veratrum frigidum *Schlecht. in Linn.* vi. 46. — The alpine region of Mount Orizaba, in Mexico.

Bulb oblong, attenuated, tunicated, cæspitose. Leaves linear, channelled, tapering to the point, erect, sheathing the bulb at the base, the lower ones above a foot long. Stem leafy, 3 feet high and more, taper, broken up at the point into a compound panicle or raceme. Branches and flowers supported by linear-lanceolate bracts. Flowers solitary, stalked. Perianth deeply 6-parted; segments narrow-lanceolate, tapered to the point, ½ an inch long, equal, blackish brown. Filaments 6, linear subulate, the 3 outer rather longer, about 3 times as short as the perianth; anthers cordate, obtuse, yellow. Ovary half superior; the carpels distinct as far as the division of the perianth; in the upper flowers abortive. — A poisonous plant called *Savoeja* by the Mexicans. Horses that eat it become stupified.

1241. H. erythrosperma *Michx. fl. am. sept.* i. 212. *Torrey fl.* i. 369. — H. læta *Bot. mag.* t. 803. Melanthium lætum *Ait. Kew.* i. 488. M. phalangioides *Lam. enc.* iv. 28. M. muscætoxicum. *Walt. car.* 125. Anthericum subtrigynum *Jacq. ic. rar.* ii. 419. — United States, in moist situations, on river banks and on high mountains.

Root bulbous. Stem 2 feet high, leafy, obtusely angular, simple, very smooth. Leaves a foot or more in length, 3–4 lines broad, mostly radical, somewhat caricine. Raceme terminal, 3–4 inches long, simple; pedicels nearly an inch in length, filiform, spreading; bracts ovate, obtuse. Flowers ¼ of an inch in diameter, white, becoming greenish with age. Petals oblong, obtuse, sessile. Stamens rather longer than the flowers; filaments subulate, inserted at the base of the petals; anthers white, roundish. Ovaries 3, superior, divaricate at the summit;

stigmas short, simple. Capsules 3, turgid, united at the base. Seeds ovate, covered with a pulpy coat, which becomes bright scarlet when ripe. *Torrey.* — This plant is a narcotic poison, and used in the southern states of America for destroying flies.

1242. H. dioica *Pursh fl. am.* i. 243. *Torrey fl.* i. 370. — H. lutea *Hort. Kew.* ii. 230. *Bot. Mag.* t. 1062. H. pumila *Jacq. ic. rar.* ii. t. 453. Veratrum luteum *Linn. sp. pl.* 1479. Melanthium dioicum *Walt. car.* p. 126. M. densum *Lam. enc.* iv. 26. — In wet meadows and bogs, common in hilly and mountainous situations in the United States. (Unicorn's horn, Devil's bit.)

Root large, præmorse. Stem 1–2 feet high, simple, very smooth, slightly angular. Leaves lanceolate, acute; the radical ones broader. Flowers diœcious and polygamous, in long spike-like racemes. ♂ petals linear-spathulate, obtuse, 1-nerved, white. Stamens rather longer than the petals; filaments subulate; anthers terminal, 2-lobed. Ovary entirely wanting. ♀ raceme becoming erect, generally few-flowered. Petals linear. Stamens very short, abortive. Ovary ovate, subtriangular, with the sides deeply furrowed; stigmas 3, spreading or reflexed. Capsule ovate-oblong, 3-furrowed, opening at the summit. Seeds many in each cell, acute, compressed. *Torrey.* — The root in infusion is anthelmintic; in tincture bitter and tonic. *DC.*

GYROMIA.

Perianthium 6-parted, revolute. Stamens 6, distinct. Stigmas 3, filiform, divaricating, united at the base. Berry 3-celled; cells 5–6-seeded. Seeds compressed, triangular.

1243. G. virginica *Nutt. gen.* i. 288. *Torrey fl.* i. 374. — Medeola virginiana *Linn. sp. pl.* 483. *Bot. Mag.* t. 1306. — Moist woods in the United States. (Indian Cucumber.)

Rhizoma oblong, tuberous, horizontal. Stem erect, simple, about 18 inches high, clothed with a brownish deciduous wool. Leaves in 2 whorls; 1 a little above the middle, of 6–8 ovate-lanceolate, acuminate leaves; the other terminal, of 2–3 ovate ones, all of them entire, membranaceous, 3-nerved. Flowers 3–6, on aggregated pedicels arising from the upper whorl, and reflexed down between the leaves. Corolla pale yellow; petals oblong, obtuse, longitudinally nerved. Stamens rather shorter than the petals, filaments capillary, smooth; anthers oblong, incumbent, 2-celled. Stigmas thick, very long. *Torrey.* — The rhizoma is diuretic and has some reputation as a hydragogue; but it is not supposed to possess much energy.

TRILLIUM.

Sepals 3, herbaceous. Petals 3, coloured. Stigmas 3, sessile. Berry superior, 3-celled; cells many-seeded.

1244. T. erectum *Linn. sp. pl.* 484. *Torrey fl.* i. 376. — T. rhomboideum *Michx. fl.* i. 215. T. atropurpureum *Bot. Mag.*

t. 470. T. fœtidum *Par. Lond.* t. 35. — Shady rocks in the United States.

Rhizoma large, præmorse, with thick horizontal fibres. Stem a foot or more in height, sheathed at the base. Leaves large, abruptly acuminate, closely sessile. Peduncle about half as long as the leaves, inclined to one side. Flower large, a little nodding. Leaflets of the calyx oblong-lanceolate, acuminate. Petals dark purple, nearly as broad again as the calyx. Filaments distinct; anthers linear; stigmas sessile, spreading. Berry large, nearly black. *Torrey.* — Rhizoma violently emetic, and the fruit suspicious.

1245. Other species are reported to have the same properties.

COLCHICUM.

Perianth coloured, funnel-shaped, with a very long subterranean, slender tube, and a somewhat campanulate 6-parted limb. Stamens 6, inserted into the throat of the tube. Ovary 3-celled; ovules numerous, in 2 or 4 rows; styles 3, filiform, long; stigmas somewhat clavate. Capsule 3-celled, 3-partible, opening inwardly. Seeds numerous, roundish, with a shrivelled skin.

1246. C. autumnale *Linn. sp. pl.* 485. *Eng. Bot.* t. 133. *Woodv.* t. 177. *Smith Eng. Fl.* ii. 202. — Moist rich pastures in many parts of England, and in various countries of Europe.

Cormus ovate, large. Leaves dark green, very smooth, obtuse, above a foot long, 1½ inch broad, somewhat keeled, produced in spring, along with the capsules. Flowers several, radical, leafless, bright purple, with a long white tube appearing in the autumn without the leaves. Capsules 3, distinct, though forming together one oblong, elliptic fruit, with intermediate fissures. Seeds whitish, polished. The flowers in one variety accompany the leaves in spring, and have long, narrow, greenish-white segments, violet-coloured at the base. *Smith.* — The dried cormi and seeds are used extensively in the manufacture of Veratria, and in various pharmaceutical preparations. Colchicum is found to increase the secretions of the intestinal mucous membrane, and of the kidneys, and in some cases to act as a sudorific; it is also emetic and purgative, and in large doses is a powerful narcotico-acrid poison. It is used extensively in dropsy, gout, rheumatism, and also as an anthelmintic. The energy of the cormus and consequently of the preparations from it is often much impaired by the collection of the plant at a wrong time of year, or by keeping it after it has been collected until the flowers sprout forth, which they will do quickly if taken into a warm place. When the leaves are quite withered is the best time for taking up the cormi, of which use should be made without loss of time. Many of those sent to the drug shops for sale have already pushed forth their flowers, which are broken off so as to prevent the circumstance from being observed. I have seen many *cwts.* sent to town in this state, which nevertheless found a ready sale and at the best price.

LILIACEÆ.

Nat. syst. ed. 2. p. 351.

ERYTHRONIUM.

Segments of the perianth reflexed, every other one with 2 tubercles at the base. Stamens 6, inserted into the base of the perianth, shorter than the pistil. Style furrowed, 3-cornered. Stigma either triangular or consisting of 3 spreading channelled plates. Capsule turbinate-globose, erect, with the valves bearing the placentæ.

1247. E americanum *Bot. Mag.* t. 1113. *Nuttall gen.* i. 223. *Bigelow med. bot.* iii. t. 58. — E. lanceolatum *Pursh. fl. am. sept.* i. 230. — Woods and fields in the United States.

Cormus situated deep in the ground, brown outside, white and homogeneous within. The whole plant smooth and glossy. Scape naked, slender. Leaves 2, nearly equal, lanceolate, veinless, of a dark brownish-green, clouded with irregular spots, sheathing the scape with their base, and terminating in an obtuse callous point. Flower solitary, drooping. Sepals and petals lanceolate, yellow, the sepals partly crimson on the outside; the petals with an obscure tooth on each side near the base. In a clear sun the flowers are expanded and revolute, but at night and on cloudy days, they are nearly closed. Filaments flat; anthers oblong-linear. Ovary obovate, style longer than the stamens, club-shaped, 3-lobed at top and terminating in 3 distinct, but not detached stigmas. Capsule oblong-obovate, somewhat pedicelled. — The fresh root emetic in doses of 25 grains; leaves said to be more active than the root.

1248. Gloriosa superba *Linn.* has a root which is said to be a most violent poison.

ALETRIS.

Perianth half-inferior, tubular, with a 6-cleft spreading limb; obscurely hexagonal, scabrous and shrivelled externally. Stamens inserted into the base of the segments; filaments flat; anthers somewhat sagittate. Ovary 3-lobed, pyramidal; style composed of 3 connate bristles; stigma simple. Capsule enclosed in the perianth, pyramidal, 3 coccous, opening at the point in 3 directions. Seeds numerous, very minute, striated.

1249. Aletris farinosa *Linn. sp. pl.* 456. *Bot. Mag.* t. 1418. *Bigelow med. bot.* iii. t. 50. *Bot. Cab.* t. 1161. *R. and S.* vii. 626. — Fields and edges of woods in the United States.

Leaves radical, in a single circle, sessile, ribbed, lanceolate, and smooth. Stem from 1 to 3 feet high, invested with remote scales, which sometimes expand into small leaves. Spike slender, scattered,

with very short pedicels and minute bracts. Perianth white, of an oblong bell-shape, divided at the mouth into 6 acute, spreading segments; the outside, particularly as the flower grows old, has a roughish, wrinkled or mealy appearance, by which the specific name was suggested. Stamens short, inserted near the mouth of the perianth at the base of the segments. Ovary pyramidal, half inferior, tapering: style triangular, separable into 3. Capsule invested with the permanent corolla, triangular, 3-celled, 3-valved at top. Seeds numerous, minute, fixed to a central receptacle. — One of the most intense bitters known. Used in infusion as a tonic and stomachic; large doses produce nausea and tendency to vomit. Has been employed in chronic rheumatism.

SQUILLA.

Sepals 3, coloured, spreading. Petals very like them, and scarcely broader. Stamens 6, shorter than the perianth; filaments smooth, somewhat dilated at the base, acuminate, entire. Ovary 3-parted, glandular and melliferous at the apex; style smooth, simple; stigma obscurely 3-lobed, papillose. Capsule rounded, 3-cornered, 3-celled. Seeds numerous, in 2 rows, flattened, with a membranous testa.

1250. S. maritima *Steinheil in ann. sc. n. ser.* vi. 279. — Scilla maritima *Linn. sp. pl.* 442. *Desf. fl. atl.* i. 297. *Red. Lil.* t. 116. *Woodv.* t. 118. *R. and S.* vii. 556. Ornithogalum maritimum *Lam. fl. fr.* iii. 276. O. Squilla *Bot. Mag.* t. 918. Stellaris Scilla *Mœnch. meth.* 304. Σκιλλα, *Diosc.* — Near the coast of the Mediterranean, on both the North and South sides, Portugal, the Levant. (Squill.)

Bulb roundish-ovate, very large, between globose and ovate, half above ground, with the integuments either pale green or red. Leaves appearing long after the flowers, broad-lanceolate, channelled, spreading, recurved. Scape about 2 feet high, terminated by a rather dense, long, ovate raceme. Flowers about $\frac{3}{4}$ of an inch across, spreading, pale yellowish-green, with a green stain along the middle of each segment. Filaments shorter than the segments of the perianth. — M. Steinheil rightly separates this plant from the numerous species to which the name of Scilla has in modern times been applied. It differs essentially in having large winged seeds and 3 nectariferous glands at the apex of the ovary. — The bulbs contain an active principle called Scillitin, and have been officinal from a very remote period. They are very acrid and capable of vesicating. Squills are used medicinally as an emetic medicine in hooping-cough, and croup, as a diuretic in dropsies, and in chronic pulmonary affections, such as chronic catarrh, humid asthma, winter cough, &c. They are also employed as an expectorant. In commerce there are two sorts the red and the white, which appear to be mere varieties differing in the colour of the bulbs. The dry external scales of the bulb, and the young and tender interior ones, are inert or nearly so and should be rejected; the intermediate scales are, for obvious physiological reasons, the part in which the energy of the plant principally resides.

1251. S. Pancration *Steinh.* l. c. p. 279. — Πανκρατιον, *Dios-*

corides. — Malta, Cadiz, and probably in other parts of the Mediterranean.

Bulb about half the size of the last species, pale green or whitish green; or occasionally red. Leaves much shorter, more acute, erect and narrower. Stem more glaucous. Flowers smaller, more compactly arranged, with shorter bracts. Flower-stalks shorter Flower-bud more blunt. Petals and sepals spread fully out, white, oval, obtuse, mucronulate, marked with a pale pink line along the middle of the back. — By these characters M. Steinheil distinguishes a second species of Officinal Squill, which he believes to have been the true Pancration of Dioscorides, which, according to that author, was very like Squills in its effects, but milder.

1252. S. indica *Roxb. fl. ind.* i. 147. — Sandy shores of various parts of India.

Bulb round, white, perennial, tunicated, about the size of a large apple. Leaves numerous, radical, sub-bifarious, ensiform, nearly flat, smooth on both sides, from 6 to 18 inches long. When in blossom the plant is perfectly destitute of leaves. Scape erect, round, smooth, naked; including the raceme from 2 to 3 feet long. Raceme very long, erect. Flowers remote, long-pedicelled, drooping. *Roxb.* — The taste of the bulb is fully as nauseous and bitter as that of *S. maritima*, and may be possessed of the same qualities. *Roxb.* — I leave this in the same genus as the Officinal Squill, notwithstanding that it is quite possible it may not belong to it. No one seems to have noticed the plant except Roxburgh, and I have never seen a specimen of it.

1253. Scilla Lilio-Hyacinthus *Linn.* has purgative bulbs, according to De Candolle.

LEDEBOURIA.

Perianth 6-leaved, permanent. Stamens inserted into the base of the perianth. Ovary 3-parted, pedicellate, roundish; style capillary, quite simple; stigma acuminate. Utricles 3, connected at the base, 1-seeded; 2 often abortive, and in that case the third obovate and curved.

1254. L. hyacinthoides *Roth. nov. sp.* 195. *R. and S.* vii. 365. — Erythronium indicum *Rottler.* — Bundelkund.

A small bulbous plant looking something like Scilla autumnalis. Bulb ovate, the size of a pigeon's egg. Leaves 2–5, flaccid, often curved inwards and doubled up. Scape slender, erect, smooth, about as long as the cylindrical raceme, which does not exceed an inch in length. Peduncles spreading, filiform, very much longer than the minute scale-like bracts. Flowers apparently pink or light purple; segments linear, curved inwards at the point. Stamens violet; anthers nearly round. — According to Theodore Martius the bulbs are used as a substitute for Squills, in the East Indies. Ainslie states that they are employed in cases of strangury and fever in horses.

ALLIUM.

Flowers umbellate, with a membranous spathe. Perianth

6-parted, permanent, equal. Stamens inserted into the base of the perianth; filaments either all alike, or every other one tricuspidate, with the anther on the middle point. Style subulate; stigma simple. Capsule usually obtusely 3-cornered or 3-lobed, depressed, 3-celled, bursting into 3 valves through the dissepiments, and containing 2 or 1 black angular seed in each cell.

1255. A. sativum *Linn. sp. pl.* 425. *Desf. fl. atl.* i. 287. *DC. fl. fr.* iii. 219. *S. and C.* t. 110. *R. and S.* vii. 1000. — Portugal? Hiéres? Egypt? (Garlic.)

Bulbs clustered, very proliferous, many enveloped in the same silvery skin. Stem about 2 feet high, leafy below the middle. Leaves acute, distichous, glaucous, channelled above. Spathe calyptriform, horned. Umbels bulbiferous. Flowers, if any, pink, red, or whitish, rather longer than the stamens. — The bulbs act as a local irritant, and, when taken into the stomach as a stimulant, expectorant and diuretic. They have been used in dropsies and as an anthelmintic. Steeped in rum they form a favourite remedy among country people for the hooping cough; the infusion is rubbed night and morning into the skin of the patient's loins. A clove of garlic or a few drops of the juice, introduced into the ear, are said to prove highly efficacious in atonic deafness.

1256. A. Cepa *Linn. sp. pl.* 431. *Fl. græc.* t. 326. *R. and S.* vii. 1024. — Egypt. (Onion.)

A biennial. Bulbs simple, round, depressed or globose or oblong, invested with shining thin dry membranes. Stem 1–2 feet high, fistular, leafy at the base. Leaves taper, fistular, distichous, glaucous, acute, shorter than the stem. Spathe reflexed, generally longer than the lower flowers. Umbels large, regular, compact, many-flowered, not bulbiferous. Pedicels about an inch long, thickened at the point. Flowers whitish, greenish, or tinged with purple; the segments always having a green keel. Stamens almost twice as long as the perianth. — The onion is stimulant, diuretic, expectorant, and rubefacient. The juice is sometimes given, made into a syrup with sugar, in infantile catarrhs and croup, in the absence of much inflammatory action. It is also recommended in dropsy and calculous disorders. Roasted and split it is sometimes applied as an emollient poultice to suppurating tumours. *Wood and Bache.*

1257. Bulbine planifolia *R. and S.* (Anthericum bicolor *Desf.*) has purgative roots according to De Candolle.

DRACÆNA.

Perianth urceolate, tubular, or deeply 6-parted, deciduous; with a spreading or reflexed limb. Filaments thickened in the middle, inserted into the upper part of the tube of the perianth; anthers linear, incumbent. Ovary pedicellate; stigma depressed, obtuse or 3-lobed. Berry subglobose; 3-celled; cells 1–2-seeded, usually abortive.

1258. D. Draco *Linn. syst. veg.* 275. *R. and S.* vii. 337.

Bertholl. in n. act. acad. N. C. xv. t. 35–39. — Asparagus Draco *Linn. sp. pl.* 451. — Canary Islands, and East Indies.

A large tree with an irregular branching forking head, the branches of which are swollen and bear leaves only at their points, which are often divided into fingers. Leaves about a foot long, ensiform, mucronate, half involute, bright green, longitudinally striated, keeled both on the inside and outside; secreting roundish compressed tears which harden into a kind of resin. Racemes terminal, about 2 feet long, erect, compound, whitish green. Flowers numerous, articulated with their pedicel and therefore readily dropping off, usually in clusters of 4, whitish green, or white when fully expanded, at which time their segments are revolute. Berry yellowish, with 6 furrows. — *Dragon's-blood*, a tonic astringent resin, sometimes employed in diarrhœa and passive hæmorrhages, is yielded in part by this tree, from the surface of the leaves, and from the cracks in its trunk. It is however scarcely known to modern druggists, who sell the astringent resin of *Pterocarpus*.

1259. D. terminalis *Blume* (D. ferrea *Spreng.*), and

1260. D. ferrea *Linn.* (D. terminalis *Jacq.*) are said to have astringent roots, found useful in dysentery.

ALOE.

Perianth tubular, 6-cleft, fleshy, nectariferous at the base the sepals of the same form as the petals, and closely imbricating them. Stamens hypogynous, as long as the perianth, or even longer. Capsule membranous, scarious, 3-cornered, 3-celled, 3-valved, with a loculicidal dehiscence. Seeds numerous, in 2 rows, roundish or angular.

1261. A. vulgaris *Lam. encycl.* i. 86. *Desf. fl. atl.* i. 310. — A. barbadensis *Mill. dict.* ed. 8. No. 2. *DC. pl. grasses* p. 27. *R. and S.* vii. 693. A. perfoliata π, vera *Linn. sp.* 458. (*Rheede* xi. t. 3.) — Αλοη *Diosc.* — The East Indies and Barbary; now cultivated in the West Indies; as well as Italy, Sicily, and Malta.

Stem woody, simple, cylindrical, short. Leaves fleshy, amplexicaul, first spreading, then ascending, lanceolate, glaucous-green, flat above, convex below, armed with hard distant reddish spines perpendicular to the margin; a little mottled with darker colour; the parenchyma slightly coloured brown and very distinct from the tough leathery cuticle. Scape axillary, glaucous reddish, branched. Spike cylindrical-ovate. Flowers at first erect, then spreading, afterwards pendulous, yellow, not longer than the stamens. — This yields what are called *Barbadoes Aloes*, or *hepatic aloes* by some writers, but not the true hepatic aloes; it is imported in gourds from Jamaica and Barbadoes, is of a dark-brown or black varying to reddish-brown or liver-colour, and has an unpleasant odour.

1262. A. socotrina *Lam. encycl.* i. 85. *DC. plant. grass.* t. 85. *Woodv.* t. 202. *Bot. Mag.* t. 472, 1474. *R. and S.*

vii. 702. — A. vera *Mill. dict.* ed. 8. No. 15. A. perfoliata *Linn. sp. pl.* 458. — Island of Socotra.

Stem woody, straight, 1½ foot high and more, naked below, where it is strongly marked with the scars of leaves. Leaves amplexicaul, ascending, ensiform, green, curved inwards at the point, convex below, rather concave above, marked with numerous small white marginal serratures, the parenchyma abounding in a bright brownish-yellow juice. Raceme cylindrical, unbranched. Flowers scarlet at the base, pale in the middle, green at the point. Stamens unequal, 3 of them longer than the flowers. — *Socotrine aloes*, the best of all for medical purposes, are produced by the succulent leaves of this. The drug is imported from Smyrna and Bombay, in skins, chests and casks, is of a reddish-brown colour, glossy and pellucid, with a smooth conchoidal fracture. Its taste is very bitter and the odour pleasant and aromatic. *Mocha aloes* and genuine *hepatic aloes*, are supposed to be varieties of the same species.

1263. A. purpurascens *Haworth in Trans. Linn. Soc.* viii. 20, said to be a native of the Cape of Good Hope, and by some Botanists considered a variety of *A. socotrina*, is stated by Theodore Martius also to produce Socotrine Aloes.

1264. A. spicata *Thunb. diss.* No. 2. *fl. cap. ed. Schultes* 309. *Linn. suppl.* 205. *R. and S.* vii. 705. — Interior of the Cape of Good Hope.

Stem 3–4 feet high, as thick as a man's arm. Leaves thick, fleshy, broad at the base, gradually narrowing to the point, channelled, full 2 feet long, distantly toothed, with a few white spots; their parenchyma almost colourless. Spike a foot long, very compact, with the flowers campanulate and horizontal. The 3 petals broader, ovate, obtuse, white with a triple green line, the sepals narrower, less concave. Stamens much longer than the perianth. The flowers are filled with a purplish honey. — This is said to be the principal source of *Cape Aloes*, a sort having a more strong and disagreeable odour than Barbadoes Aloes. *Horse Aloes* are supposed to be produced from the same species, and to owe their difference to being obtained by boiling the leaves that have been previously used for producing a finer sample.

1265. A. arborescens *Mill.*; 1266. A. Commelyni *Willd.*; 1267. A. mitriformis *Willd.* (A. nobilis and supralævis *Haw.*) are all said to be collected for the preparation of Cape Aloes.

HERRERIA.

Perianth rotate, 6-parted. Stamens inserted into the base of the segments; anthers round. Ovary 3-cornered; style erect; stigma 3-cornered. Capsule 3-quetrous, winged, 3-celled, 3-valved, the valves bearing the dissepiments; the cells 2–4-seeded. Seeds lenticular, membranous at the edge.

1268. H. Salsaparilha *Martius in R. and S.* vii. 363. — Brazil, in the province of Minas Geraes.

A climbing shrub, with a tuberous rhizoma like that of *Smilax china*, oblong or globose, 3–4 inches long, ash-coloured externally, woody and whitish internally. Stems numerous, smooth, climbing, knotty, armed with straight prickles. Leaves lanceolate or lanceolate-oblong, acuminate, collected in stellate fascicles. Racemes erect, shorter than the leaves. Segments of the perianth linear-lanceolate, rather blunt. — Employed in Brazil as *Sarsaparilla*.

SMILACEÆ.

Nat. syst. ed. 2. p. 359.

SMILAX.

Dicœcious. Perianth 6-parted, nearly equal, spreading. ♂. Stamens 6; anthers erect. ♀. Perianth permanent. Ovary 3-celled, the cells 1-seeded; style very short; stigmas 3. Berry 1–3-seeded. Seeds roundish; albumen cartilaginous; embryo remote from the hilum. *RBr.*

*** According to Dr. Hancock, to whom we are so much indebted for valuable information concerning the medicinal plants of Guayana, there is but one species of Smilax that yields genuine Sarsaparilla. This grows chiefly on the elevated lands of the Rio Imiquen, at Unturana and Caraburi; but it is constantly adulterated with inferior sorts. Dr. Hancock says that the Sarsa of the Rio Negro, which comes by way of Angostura or Para is the best, and this is certainly not Willdenow's S. siphilitica: the true species has no axillary spines. It appears that of six or eight species of Smilax growing in the woods of Guayana, but one is found to manifest to the taste any of the sensible properties of the genuine medicinal Sarsa; the root being insipid and inert; *that* one Dr. Hancock describes thus:—

"The stem is round, armed with short curved spines. The leaves are oblong, pointed, distant, smooth and glossy. The root is a tuber with numerous divergent fibres of 2 or 3 lines in thickness and several feet in length."

Dr. Hancock further remarks, that "the Sarsaparilla of the shops is for the most part nearly inert, either from age or from being procured from several nonmedicinal species. It should be taken from recent importations in the *roll*, and not be that which is kept slit up in the shops, which is very often quite useless. Good Sarsaparilla has a peculiar nauseous acrimony when chewed, and this is almost the only criterion we have for judging of its medicinal activity." The properties of Sarsaparilla as a medicine are emetic, diaphoretic, narcotic, causing nausea and prostration of strength, and affecting the tongue and fauces more or less with a nauseous acrimony. The active principles are driven off by heat. See a memoir in the *Med. bot trans.* 1829, p. 61.

1269. S. aspera *Linn. sp. pl.* 1458. *DC. fl. fr.* iii. 178. *Willd. sp. pl.* iv. 773. — (*Clus. hist.* i. 112.) — South of Europe, Barbary.

There is a general opinion, adopted I know not how, that Indian Sarsaparilla is produced by this plant; and upon that supposition Mr. Garden has named a new principle he has found in it, *Smilasperic acid.* (*Med. Gaz.* xx. 800.) I cannot however discover any good authority for the rhizoma of Smilax aspera possessing active properties, and I presume, as it is not an Indian plant, there must be some mistake in the matter. Indian Sarsaparilla is produced by Hemidesmus indicus an asclepiadaceous plant, which see, No. 1153.

1270. S. Sarsaparilla *Linn. sp. pl.* 1459. *Woodv.* t. 62. — S. glauca *Michx. fl. bor. am.* ii. 237. — Southern States of the American Union.

If the North American plant is to be taken for what Linnæus intended by this name, I can find no good authority for its furnishing any part of the Sarsaparilla of commerce. Nothing is known in the United States of its possessing any medicinal properties, and it is probable that the opinion of its being the source of the drug has originated in some mistake.

1271. Smilax Purhampuy *Ruiz memoria sobre las virtudes, &c. de Purhampuy*, p. 65. — Very abundant among bushes and trees in the mountain-woods of Panao, Chaclla, Muña, Pillao, Pozuzo, and Acomayo, in Peru, flowering in October and November.

Stem climbing, prickly, nearly round. Leaves large, unarmed, cordate, ovate, acute, and acuminate, 5-nerved. Flowers from 6 to 10 on globose receptacles, umbellate, yellowish green. — The roots of this species are highly extolled by Ruiz, who calls it *China Peruviana*, as one of the very best kinds of *Sarsaparilla*. Is it not the same as S. officinalis?

1271.* *a.* S. medica *Schlecht. in Linnæa* vi. 47. — Mexico.

Stem angular, armed with straight aculei at the joints, and with a few hooked ones in the intervals. Leaves of the texture of paper, bright green on each side, smooth, cordate, auriculate, shortly acuminate, 5-nerved, with the veins of the underside prominent; in form they are very variable, being ovate, somewhat panduriform, auriculate, and somewhat hastate, with the lobes of the base obtuse, sometimes obsolete, sometimes divaricating; their edge not straight, but as if irregularly crenate; petioles and midrib armed, when old, with straight subulate prickles. Peduncles varying in length from 3 lines to an inch and more. Umbel about 12-flowered, with the pedicels about 3 lines long. — This is undoubtedly the species that produces the *Vera Cruz Sarsaparilla*. Schiede who found it on the eastern slope of the Mexican Andes, says it is carried from the villages of Papantla, Tuspan, Nautla, Misantla, &c. to Vera Cruz, under the name of *Zarzaparilla*, and is there introduced into the European market. He was told that the roots are gathered all the year long, dried in the sun, and then tied in bundles for sale. *Linnæa*, iv. 576.

1272. S. siphilitica *Willd. sp. pl.* iv. 780. *HBK. n. g. et sp. pl.* i. 271. — Woods of tropical America, on the banks of the river Cassiquiare, between Mandavaca and San Francisco Solano.

Stem round, smooth, furnished only at the knots with 2–4 short, thick, straight, prickles. Leaves a foot long, oblong-lanceolate, coriaceous, shining, acuminate, 3-nerved, terminated by a long point. — In South America a kind of Sarsaparilla is produced by the roots of this, which is held in the highest estimation. Martius is said to have found it in the Brazils, at Yupura, and by the Rio Negro. According to Mr. Pereira this yields *Lisbon* or *Brazilian Sarsaparilla*.

1273. S. officinalis *HBK. n. g. et sp. pl.* i. 271. — Banks of the Magdalena, near Bojorque.

Stem twining, angular, prickly, smooth; the young shoots unarmed. Leaves ovate-oblong, acute, cordate, netted, 5–7-nerved, coriaceous, smooth, a foot long, and 4–5 inches broad; the young ones lanceolate oblong, acuminate, 3-nerved; petioles an inch long, smooth, bearing tendrils above the base. Flowers unknown.

This is called *Sarzaparilla* by the natives of the banks of the Magdalena who, according to Humboldt and Bonpland, send great quantities to Carthagena and Mompox; whence it is shipped for Jamaica and Cadiz. Mr. Pereira suspects that this is what produces *Jamaica Sarsaparilla*, the best and most valuable kind in the market.

1274. S. glauca *Martius travels Eng. edit.* ii. 96. — Brazil.

Stem flexuose, twisted, angular, prickly, glaucous. Leaves broad ovate, rounded at each end, 3–5-nerved, spiny-toothed, glaucous; the midrib prickly. Umbels axillary, on short stalks. — According to Martius the woody knotty root of this plant is called in Brazil *Raiz da China branca e rubra*, also *Japicánga*, or *Inhapécánga*. The Brazilians consider it a specific against syphilis; but besides this it is much recommended for gout and chronic cutaneous eruptions. In using this remedy, it is taken for granted that the patient will submit to drink an enormous quantity.

1275. S. China *Linn. sp. pl.* 1479. *Willd. sp. pl.* iv. 778. Sankira vulgo Quáquara *Kœmpf. amœn.* 781. t. 783. — Wild places in China, among fern and brambles.

Rhizoma hard, large, knotty, uneven, brown or blackish externally, whitish within. Stem tapering, slightly prickly, growing 2 or 3 feet high without support, but acquiring a greater length if scrambling among bushes. Leaves thin, membranous, roundish, 5-nerved, acute at each end, or obtuse at each end, and mucronate at the point; stipules distinct, obtuse. Umbels small, 10-flowered, greenish yellow. Fruit red, size of a Bird Cherry. — The rhizoma of this forms one of the *China roots* of the shops; it is recommended as a substitute for Sarsaparilla. The Chinese eat it under the idea that it invigorates them.

1276. S. glabra *Roxb. fl. ind.* iii. 792. — Sylhet and the adjacent Garrow country.

Climbing from a large tuberous rhizoma. Stem and branches unarmed, polished. Leaves lanceolate, acuminate, rounded at the base, polished, 3-nerved, glaucous underneath. Umbels axillary, simple, sessile, solitary. Divisions of the perianth broad, obcordate. — Roxburgh says that the rhizoma is not to be distinguished by the eye from the medicinal drug brought from China, under the name of China Root. The natives of Sylhet use a decoction of the fresh root annually for the cure of sores, and venereal complaints.

1277. S. lanceæfolia *Roxb. fl. ind.* iii. 792. — Eastern frontier of Bengal.

Climbing from large tuberous rhizomata. Stem and branches unarmed, polished. Leaves lanceolate, 3-nerved, polished. Umbels simple, axillary, solitary, stalked. Divisions of the perianth linear, oblong. — Roxburgh informs us that the large tuberous rhizomata are much used by the natives of India, and are not to be distinguished from

China roots. The juice of the fresh tuber is taken inwardly for the cure of rheumatic pains, and the refuse after extracting the juice is laid over the parts most painful.

1278. S. Pseudo-China *Linn. sp. pl.* 1461. *Willd. sp. pl.* iv. 785. *Elliott Sketch.* ii. 700. — S. Sarsaparilla *Walt. carol.* 245. (*Sloane* t. 143. f. 1. *Pluk. almag.* t. 110. f. 5.)—Southern States of the American Union, in almost all soils; frequently in dry sandy situations; Jamaica.

Rhizoma tuberous,, creeping, knotty. Stem unarmed, climbing over small shrubs. Leaves unarmed, those of the stem cordate, of the branches ovate-oblong, 5-nerved, half-evergreen. Peduncles very long. — American China root is reported to belong to this plant; but it is very doubtful whether this ever comes into the drug market; several species seem to be mixed together by Botanists under this name. Elliot says that he believes this to be the one generally preferred in medicine as an alterative, and that it forms the basis of many diet drinks among the "unlicensed faculty." From the tubers, with maize, sassafras and molasses the negroes of Carolina manufacture "a very pleasant" beer.

1279. S. glycyphylla *Smith in White's Voyage* 230. *RBr. prodr.* 149. — New Holland, in the colony of Port Jackson.

Stems unarmed, round. Leaves oblong, lanceolate, acute, 3-nerved, smooth, recurved a little at the edges, glaucous underneath. Petioles bearing tendrils. *RBr.* — Fée says the leaves of this have been introduced into practice under the name of *Sweet Tea*. The infusion is sweet at first, and bitter afterwards; it is tonic and antiscorbutic.

ARACEÆ.

Nat. syst. ed. 2. p. 363.

ARUM.

Spathe convolute at bottom. Spadix naked at the upper end, interruptedly unisexual at the bottom. Rudimentary organs beneath and occasionally above the stamens. Anthers sessile, distinct or variously consolidated, with 2 lateral cells opening by a partial slit. Ovaries free, 1-celled, with 2–6 ovules attached to the inner lining; stigmas sessile, obtuse. Berries 1-seeded or few-seeded. Seeds albuminous. *Blume.*

1280. A. maculatum *Linn. sp. pl.* 1370. *Eng. Bot.* t. 1298. *Woodv.* t. 25. *Smith Eng. Fl.* iv. 146. — A. vulgare *Lam. fl. fr.* 1150. *Blume Rumphia* i. 117. — All the temperate parts of Europe, coast of Barbary, and the higher mountains of Madeira. (Wake Robin.)

Tubers large, flat, buried under ground. The whole herbage of a bright shining green. Leaves stalked, sagittate, more or less hastate, acute, erect, spotted variously with dingy purple, or unspotted. Spathe on a radical scape, erect, pale green, occasionally spotted; its upper part ovate-oblong, acuminate. Spadix clavate, obtuse, purple or yellowish. Berries scarlet, remaining long after their spathe and the foliage of the plant have withered. — The tubers are composed of a large quantity of amylaceous matter, mixed with an acrid poisonous juice. By repeated washing and by means of heat the acrid principle is removed, and the residuum is a bland nutritious substance of the nature of Arrow root, which is manufactured in the island of Portland, and thence called Portland Sago. It is used extensively in some parts of Dorsetshire. In the recent state the tubers are stimulant, diaphoretic and expectorant.

ARISÆMA.

Spathe convolute at base. Spadix naked at the point, unisexual or ♂ below; rudimentary organs placed above the ♀, or altogether absent. Anthers on distinct filaments, whorled, with the cells either disjoined or approximated, opening by a pore or transverse cleft. Ovaries distinct, 1-celled; ovules 2–6, seldom more, at the base, erect; styles absent or short; stigmas undivided. Berry 1-seeded, or few-seeded; seeds albuminous. *Blume.*

1281. A. atrorubens *Blume Rumph.* i. 97. — Arum atrorubens *Hort. Kew.* iii. 315. A. triphyllum *Linn. sp. pl.* 965.

Bigelow med. bot. i. t. 4. *Mart. amœn. bonn.* 16. f. 11.—Swamps and damp shady woods in North America. (Dragon root, or Indian turnip.)

Rhizoma round, flattened, its upper part tunicated like the onion, its lower and larger portion tuberous and fleshy, giving off numerous long white radicles in a circle from its upper edge; covered on the under side with a dark, loose, wrinkled skin. Leaves usually one or two on long sheathing footstalks, ternate; the leaflets oval, mostly entire, acuminate, smooth, paler on the under side, and becoming glaucous as the plant grows older, the two lateral ones somewhat rhomboidal. Scape erect, round, green or variegated with purple, invested at base by the petioles, and their acute sheaths. Spathe large, ovate, acuminate, convoluted into a tube at bottom, but flattened and bent over at the top, like a hood, internally various in colour, in some wholly green, in others dark purple or black, in most variegated, with pale greenish stripes on a dark ground. Spadix much shorter than the spathe, club-shaped, rounded at the end, green, purple, black, or variegated, suddenly contracted into a narrow neck at base, and surrounded below by the stamens or ovaries. In the barren plants, its base is covered with conical, fleshy filaments, each bearing from 2 to 4 circular anthers. In the fertile plants, it is invested with roundish crowded ovaries each tipped with a stigma. Plants which are perfectly monœcious, and which are the least common, have stamens below the ovaries. The upper part of the spadix withers with the spathe, while the ovaries grow into a large compact bunch of shining scarlet berries. — Violently acrid and almost caustic; the rhizoma when fresh is too powerful to render its internal exhibition safe. The acrid property extremely volatile; easily driven off by heat, when the rhizoma yields one-fourth of pure delicate amylaceous matter, resembling the finest arrow root, " very white, delicate and nutritive."

COLOCASIA.

Spathe tubular, permanent, straight or cucullate. Spadix naked at the point, ♀ at the base, ♂ at the apex, with rudimentary processes between. Anthers connate. Ovary 1-celled. Stigma capitate, not glutinous.

1282. C. esculenta *Schott. meletem.* 18. — Arum esculentum *Linn. sp. pl.* 1369. Caladium esculentum *Vent. Willd. sp. pl.* iv. 489. (*Rumph.* v. t. 110. f. 1. *Sloane* i. t. 106. f. 1.) — Hotter parts of the world in both hemispheres. (Cocoa roots, Eddoes, &c.)

Stemless. Leaves peltate, cordate, ovate, entire, glaucous, green. Spadix shorter than the ovate-lanceolate spathe. — The tubers and leaves are a common article of food among negroes, but they are so acrid as to prove uneatable by Europeans not accustomed to them. The boiled leaves produce a most inconvenient flow of saliva, and a sense of choking, as I have experienced.

TYPHONIUM.

Spathe convolute at base. Spadix naked at the end; interruptedly unisexual at the base. Rudimentary organs between

the fertile ones. Anthers distinct, 2-celled; cells on each side opening by a complete cleft. Ovaries free, with one erect ovule in each attached to the base of the cell. Stigmas sessile, obtuse. Berries 1-seeded.

1283. T. trilobatum *Blume Rumphia* i. 132. — Arum trilobatum *Linn. sp. pl.* 1369. *Lam. encycl.* iii. 10. A. orixense *Roxb. fl. ind.* iii. 504. *Bot. Rep.* t. 356. *Bot. Reg.* t. 450. — Various parts of the East Indies.

Tubers nearly round, the size of a pullet's egg, white, with small inequalities, having many fibres issuing from the apex. Leaves radical, stalked, deeply 3-lobed; lobes ovate, pointed, a little scolloped, smooth; about 8 or 10 inches broad, and the same length; round the under side, parallel with the margins and near it runs a double nerve. Petioles erect, round, tapering, striated, about 12 inches long, sheathing, and embracing one another at the base. Scape axillary, very short, just sufficiently long to elevate the spathe above the ground. Spathe shorter than the petioles, striated, erect; the inside red; the outside herbaceous. Spadix, at the base surrounded with ovaries, crowned with many yellow, branched filaments; the middle covered with anthers, above which there is no second set of rudimentary processes; apex scarlet, as long as all the rest of the spadix, erect, tapering, subulate, from a concave broad base, to a point which is neither obtuse nor sharp. — The tubers when fresh are exceedingly acrid. The natives of India use them in poultices to disperse or bring forward scirrhous tumours. They also apply them externally to the bite of venomous snakes, at the same time giving inwardly about the size of a field bean. It is certainly a most powerful stimulant, in proper hands. *Roxb.*

DRACONTIUM.

Spathe cymbiform. Spadix cylindrical, quite covered with ♂ flowers. Perianth 7–9-parted. Stamens 7–9, with oblong, 2-celled anthers, opening obliquely by a pore at the apex, and distinct from their filaments. Ovary 2–3-celled, each cell containing 1 pendulous ovule. Berry 1–3-seeded. Seeds without albumen.

1284. D. polyphyllum *Linn. sp. pl.* 1372. *Willd. sp. pl.* ii. 288. *Bot Reg.* t. 700. — Guayana, Surinam, and elsewhere in equinoctial America. (Labaria.)

Tuber resembling a small cake, producing 1 or 2 leaves, with long clouded spotted petioles resembling the skin of a snake. Leaves themselves supra-decompound, pedate, with the segments pinnatifid, distant, and with oblong, acute strongly veined lobes. Spathe large, purple, very deep-coloured inside, hooded, acute, appearing after the leaves have withered; smelling so powerfully upon the first opening, that vomiting and fainting sometimes ensue from the stench. Linnæus says "olfaciente attonitos redderet et catalepticos." — This is one of the remedies used in Guayana against the bite of the Labarri snake, which its spotted leafstalks resemble in colour; no doubt it is a powerful stimulant. Ainslie says the prepared tuber is supposed in India to be antispasmodic,

to be a valuable remedy in asthma, and to be used in hemorrhoids; but as this species is not found in India some other plant was probably intended.

SYMPLOCARPUS.

Spathe cucullate. Spadix short, covered with tetrandrous floscules. Ovaries 1-celled, with 1 ovule in each; stigma minute. Berries consolidated. Seeds without albumen.

1285. S. fœtidus *Nutt. gen.* i. 105. *Barton veg. mat. med.* t. 10. *Torrey fl.* i. 191. *Schott. meletem.* 22. — Pothos fœtida *Michx. bor. amer.* ii. 186. *Bot. Mag.* t. 836. Dracontium fœtidum *Linn. sp. pl.* 1372. Ictodes fœtidus *Bigelow med. bot.* ii. t. 24. — Swamps and meadows in the United States. (Skunk weed, Skunk Cabbage.)

Tuber large, abrupt, with numerous, crowded, fleshy fibres. Spathe præcocious, ovate, turgid, various in width, cucullate, spotted and sometimes nearly covered with dull brownish purple, the top acuminate and incurved, the edges folded inwards, auriculate at base, and at length coalescing. Spadix oval, on a short peduncle, covered with perfect tetrandrous flowers, and of the same colour with the spathe. Sepals 4, fleshy, wedge-shaped, truncate, the top and edges inflected. Stamens 4, opposite the sepals, with subulate filaments equal in length to the calyx, and oblong 4-celled anthers. Style 4-sided, tapering; stigma minute, pubescent; ovary roundish, concealed within the spadix. After the spathe decays, the spadix continues to grow, and with it every part of the flowers except the anthers. When the fruit is ripe, the spadix has attained many times its original dimensions, while the calyx, filaments and style are larger, very prominent and separated from each other. Within the spadix at the base of each style is a round, fleshy seed, as large as a pea, white, tinged with green and purple, invested with a separate membranous coat, and with a prominent embryo situated in a depression at top. Leaves spring up sometime after the flowers, numerous, large, crowded, oblong heart-shaped, acute, smooth, with numerous fleshy veins of a pale colour; on long channelled petioles, furnished with large oblong sheaths. — This plant emits a powerful offensive odour; its tubers are acrid; but when dried and powdered are antispasmodic. An excellent remedy in asthma, catarrh and chronic coughs. Also employed with success in hysteric paroxysms, dropsy, rheumatism, and even epilepsy.

1286. The rhizomata of Calla palustris *Linn.*, although acrid and caustic in the highest degree, are according to Linnæus made into a kind of bread in high estimation called "Missebrœd" in Lapland. This is performed by drying and grinding the roots, afterwards boiling and macerating them till they are deprived of their acrimony, when they are baked like other farinaceous substances.

HOMALOMENA.

Spathe gaping, afterwards closing up. Spadix completely covered, hermaphrodite at the base, male at the upper end. Anthers sessile, opening by terminal pores. Ovaries 3-celled; ovules numerous; stigma trifid, concave.

1287. H. aromatica *Schott meletem.* 20. — Calla aromatica *Roxb. fl. ind.* iii. 513. — Chittagong.

Tubers invested with the withered sheaths of the leaves, with numerous, long, white, fibrous cords issuing from every part. Stem short. Leaves radical, long-stalked, in shape between cordate and sagittate, acuminate, lucid; lobes rounded and rather remote from each other, in length about 12 inches, and little more than half that in breadth; petioles smooth, with a sheathing base. Spathes many together, from the axils and centre of the leaves, scarcely half the length of the petioles. Spathe somewhat cylindrical, rather obtuse, with a point, smooth on both sides, pale greenish yellow. Spadix sub-cylindrical, obtuse, rather longer than the spathe; the upper two thirds covered with sessile, many-celled anthers; the lower third with the ovaries intermixed with about as many abortive stamens as there are ovaries. Style 0. Stigma 2 or 3-lobed. Berries oblong, not unlike a large berbery, and rarely containing more than a single seed. — When cut this diffuses a pleasant aromatic scent, something like that of Zingiberaceæ. The medicinal virtues of the rhizoma are in high estimation among the natives of India; it sells from 10 to 16 rupees the maund. *Roxb.*

SCINDAPSUS.

Spathe gaping, afterwards fully expanded, deciduous. Spadix sessile ♀ at the base, ♂ elsewhere. Ovaries 1-celled, with 1–2 cells attached to the bottom; stigma sessile, oblong.

1288. S. officinalis *Schott meletem.* 21. — Pothos officinalis *Roxb. fl. ind.* i. 431. — Bengal.

Stem perennial, creeping up to the top of large trees, and like the Ivy, taking firm hold with its innumerable roots; about as thick as the little finger, smooth, except when scarred by the fallen leaves, and by the roots from the side next the tree which supports it. Leaves alternate, sub-bifarious, stalked, oblong-cordate, entire, pointed, smooth on both sides; from 6 to 10 inches long, and from 3 to 6 broad; petioles sheathing, channelled, smooth, shorter than the leaves. Peduncles terminal, solitary, round, smooth, scarcely half the length of the petioles; when in flower erect, but often drooping, from the increasing weight of the fruit. Spathe nearly cylindrical, about 6 inches long, opening a little on one side: when in flower, smooth on both sides; greenish without, and of a pale yellow colour within; apex filiform, and a little twisted. Spadix nearly cylindrical, obtuse, as long as the spathe, pale greenish yellow, dotted with the dark-coloured stigmas of the numerous ovaries which everywhere cover it. Flowers naked. Filaments about 8 to each ovary, 2 on each face; very short, as if inserted on the base of the ovary; anthers sub-sagittate, 4-lobed. Ovaries numerous, truncate, completely covering every part of the cylindrical spadix, 1-celled, with 1 seed attached in an oblique manner to the bottom of the cell. The substance of the ovary is replete with rigid, sharp, vertical bristles, which are readily detached, and stick in the skin, causing pain and itching. Stigma, a channel filled with gelatinous matter, running from the cell of the ovary to the centre of the truncate apex, where it ends in a small slit, embraced by 2 darker-coloured, somewhat callous lips. Pericarps chiefly sterile, soft, fleshy, 1-celled, 1-valved; when the fruit is ripe they detach themselves from the spadix, and drop off, leaving

the seed behind still attached to it. Seed single, ovate-cordate, somewhat 2-lobed, covered at the base with a thin, red, succulent aril. Albumen 0. Embryo hooked, very succulent. — The fruit cut into transverse pieces and dried is an article of some importance in Hindoo Materia Medica, called *Guj-pippul*, and sold by the druggists under that name. *Roxb.*

DIEFFENBACHIA.

Spathe convolute. Spadix completely covered, pseudo-hermaphrodite at the base, male next the upper end. Anthers subsessile; the cells opening by a pore at the apex. Ovaries 1-celled, surrounded by 3 sterile stamens. No manifest style; ovule solitary, erect; stigma capitate.

1289. D. Seguina *Schott. meletem.* 20. — Caladium Seguinum *Vent. Willd. sp. pl.* iv. 490. *Hooker's Exot. fl.* t. 1. Arum Seguinum *Linn. sp. pl.* 1371. — West India Islands. (Dumb Cane.)

A small, arborescent, palm-like, herbaceous plant. Stem 5–6 feet high, slender, scarred by the remains of fallen leaves. Leaves ovate-oblong, undulated, acute, with a thick midrib, and often perforated. Spathes axillary, 5–6 inches long, oblong, stalked, pale green, convolute, with the apex of the spadix just protruding. Spadix cylindrical, wholly male at the apex, wholly female, with abortive stamens intermixed at the base, and naked in the middle. Anthers sessile, consolidated into peltate hexangular bodies. Ovaries roundish, terminated by flat sessile lobed stigmas, and surrounded by clavate pellucid processes. According to Sir Wm. Hooker the ovaries are 2-celled, with several ovules in each cell: this is at variance with Schott's character of the genus as given above; I know not which is right. — One of the most venomous of all known plants. If the rhizoma is chewed it produces a dangerous swelling of the tongue, and is said to produce dumbness when merely applied to the lips. Sir Wm. Hooker says that the slightest application of the juice of the spadix to the tongue gives great pain. The juice is said to impart an indelible stain to linen. Browne says that the stem is employed in the West Indies to bring sugar to a good grain, when the juice is too viscid, and cannot be made to granulate properly by the application of lime alone.

ACORACEÆ.

Nat. syst. ed. 2. *p.* 365.

ACORUS.

A spadix naked and closely covered with flowers. Flowers surrounded with 6 scales. Ovaries 3-celled; about 6 suspended ovules in each cell; stigmas 3-lobed. Berries 1-seeded.

1290. A. Calamus *Linn. sp. pl.* 462. *E. Bot.* t. 356. *Woodv.*

t. 173. *Smith Eng. Fl.* ii. 157. — Ακορος, *Dioscorides.* — Meadows, and banks of rivers all over Europe. (Sweet Flag.)

Rhizoma thick, rather spongy, with many long roots, aromatic, like every part of the herbage but much more powerfully so. Leaves erect, 2 or 3 feet high, bright green, near an inch broad. Stalk like the leaves, except being thicker below the spadix, and not quite so tall. Spadix about a foot above the root, a little spreading, 2 or 3 inches long, tapering, covered with a mass of very numerous, thick-set, pale green flowers, which have no scent, except when bruised. A very narrow wavy membrane may be observed at the base of the spadix, which must be taken as the rudiment of a spathe. *Smith.* — The rhizoma contains an aromatic bitter principle which has caused the plant to be regarded as medicinal. In cases of chronic catarrh and humid asthma benefit has been received from its exhibition. In Constantinople the rhizoma is made into a confection, which is considered a good stomachic and is eaten freely during the prevalence of epidemic diseases. It is in this country chiefly employed by perfumers, in the manufacture of hair powder, on account of the fragrance of the essential oil which is mixed with its farinaceous substance. Mr. Pereira says that although it is rarely employed in medicine it might frequently be substituted for other more costly aromatics. It is adapted to cases of dyspepsia, or as an adjunct to tonics or to purgatives.

PISTIACEÆ.

Nat. syst. ed. 2. *p.* 367.

PISTIA.

Spathe tubular at the base, and connate with the spadix; limb spreading, augmented by a process forming an involucre to the spadix at the upper part. Spadix interruptedly ♂, ♀ at bottom, ♂ at the top, which is distinct. Anthers 3–8, adnate, subglobose. Ovary single, placed obliquely upon the adnate base of the spadix, 1-celled, with many erect ovules, attached to a parietal placenta close to the base; style thick; stigma somewhat cyathiform. Fruit baccate, 1-celled, many-seeded, or by abortion few-seeded. *Blume.*

1291. P. Stratiotes *Linn. sp. pl.* 963. *Willd.* iii. 690. *Blume Rumphia* i. 79. *Roxb. fl. ind.* iii. 131. — (*Rheede* xi. t. 32. *Rumph.* vi. t. 74.) — Pools of stagnant water, all over the Tropics.

Root consists of numerous, long, tapering, hairy fibres. Leaves radical, sessile, between obcordate and triangular; having the exterior margin scolloped, with many elevated ridges running lengthways underneath; downy on both sides. Runners from the base of the united

leaves. Flowers short-peduncled from the centre of the leaves, few and in succession, small, pale-yellow. Spathe inferior, 1-leaved, tubular, irregular; tube obliquely bell-shaped, woolly on the outside; with a crescent-shaped, fleshy, yellow gland on the centre of the inside, opposite to the stigma; border cordate, woolly on the outside; margins a little waved; on its middle there is a green, fleshy, crenulate, saucer-shaped body, from the centre of which rises the antheriferous column. Stamina; filaments single, from the centre of the upper border of the calyx. Anthers 5, adjoined to the enlarged apex of the short column. — The whole plant is acrid. In Jamaica it communicates this quality to the water tanks in which it grows, and is said to give rise to the bloody flux. *Browne*. The Hindoos consider the decoction demulcent and cooling and prescribe it in dysuria; the leaves are also made into a poultice for the piles.

GRAMINACEÆ.

Nat. syst. ed. 2. *p.* 369.

LOLIUM.

Spikes many-flowered, distichous, sessile, contrary to the rachis. Flowers beardless at the base. Glumes 2, nearly equal, herbaceous, lanceolate, channelled, awnless; the lower or inner ones very often deficient in the lateral spikelets. Paleæ 2, herbaceous; the lower concave, awnless, or awned below the point; the upper bicarinate. Stamens 3. Ovary smooth; styles 2, very short, inserted below the point; stigmas feathery; with long, simple, finely-toothed, transparent hairs; scales 2, fleshy, smooth, acute, entire or 2-lobed. Caryopsis smooth, adhering to the upper paleæ. *Kunth.*

1292. L. temulentum *Linn. sp. pl.* 122. *fl. Dan.* t. 160. *Eng. Bot.* t. 1124. *Kunth gram.* 437. — Europe, Japan, New Holland, Chili, Montevideo. (Darnel.)

Root of a few downy fibres. Stems 2 feet high, leafy, round; smooth and shining below; rough upwards. Leaves of a brighter green than L. perenne, rough on the upper side. Sheaths roughish. Ligula short, abrupt, notched. Spike about a span in length, with a rough stalk. Glumes linear, flattish, many-ribbed, roughish at the edges, rising above the spikelets, generally attended, in the lower ones, with a short elliptical inner valve, pressed close to the channel in the stalk. Florets about 6. Outer paleæ elliptical, concave, with a dorsal awn longer than itself; inner rough at the folds. Grain elliptical, a little flattened, with a furrow along its upper side, where it is firmly coated by the inner valve. — The grains are of evil report, for causing intoxication in men, beasts, and birds, and bringing on fatal convulsions. Haller speaks of them as communicating these properties to beer. *Smith.* It acts as a narcotico-acrid poison. *Darnel meal* was formerly recommended as a sedative poultice.

TRITICUM.

Spikelets 3 or many-flowered; the fructiferous rachis generally articulated; flowers distichous. Glumes 2, nearly opposite, almost equal, awnless or awned. Paleæ 2, herbaceous: the lower awnless, mucronate or aristate at the point, the upper bicarinate; the keels more or less ciliated with aculei. Stamens 3. Ovary pyriform, hairy at the point. Stigmas 2, terminal, subsessile, feathery; with long, simple, finely-toothed hairs. Scales 2, generally entire and ciliated. Caryopsis externally convex, internally concave, and marked by a deep furrow, distinct, or adhering to the paleæ. *Kunth.*

1293. T. vulgare *Vill. delph.* ii. 153. *Host. gram.* iii. 18. t. 26. *Kunth gram.* 438. — T. hybernum et æstivum *Linn. spec.* 126. — In the country of the Baschkirs. (Wheat.)

Spike 4-cornered, imbricated, with a tough rachis. Spikelets generally 4-flowered. Glumes ventricose, ovate, truncate, mucronate, compressed below the apex, round and convex at the back, with a prominent nervure. Flowers awned or awnless. Grains loose. — Admitted into the last edition of the London Pharmacopœia, as the source of starch.

HORDEUM.

Spikelets 3 together, the lateral ones usually withered, 2-flowered, with an intermediate floret reduced to a subulate rudiment. Glumes 2, lanceolate-linear, with subulate awns, flattish, unequal-sided, at right angles with the paleæ, almost on one side, and that the outer side, herbaceous, rigid. Paleæ 2, herbaceous; the lower one concave, ending in an awn, the upper bicarinate. Stamens 3. Ovary hairy at the apex. Stigmas 2, sessile, somewhat terminal, feathery. Scales 2, entire, or furnished with a lateral lobe, usually hairy or ciliated. Caryopsis hairy at the point, oblong, furrowed on the inside, adhering to the paleæ, rarely naked. *Kunth.*

1294. H. vulgare *Linn. sp. pl.* 125. *Host. gram.* iii. t. 34. *Kunth. agrost.* 455. — Mesopotamia, *Chesney.* (Barley.)

All the florets hermaphrodite and awned. Grains arranged in 4 rows. Stems erect. Scales fringed with hairs. — Admitted as an officinal plant, chiefly because *pearl-barley*, which is barley deprived of its integuments, is found in various preparations to afford a light food for the sick chamber.

SECALE.

Spikelets 2-flowered. Florets sessile, distichous, with the linear rudiment of a third terminal one. Glumes 2, herbaceous, keeled, nearly opposite, awnless or awned. Paleæ 2, herbaceous; the lower one awned at the point, keeled, and unequal sided, broadest and thickest on the outer side; the upper shorter and bicarinate. Stamens 3. Ovary pyriform, pilose. Stigmas 2, subsessile, terminal, feathery, with long simple finely toothed hairs. Scales 2, entire, ciliated. Caryopsis hairy at the point and loose. *Kunth.*

1295. S. cereale *Linn. sp. pl.* 124. *Host. gram.* ii. t. 48. *Kunth. agrost.* 449. — The Caucasico-Caspian desert. The Crimea and the banks of the Volga. (Rye.)

Stems in a wild state rarely more than a foot high; in cultivation 2 feet high and more. Lower leaves, together with their sheaths, covered with a soft down. Rachis bearded on each side with white hairs. Glumes subulate, ciliated, scabrous, shorter than the florets taken together with their awns. Outer palcæ folded up, keeled, 3-nerved, with very long awns; the 2 nerves and awns very rough. —

This is merely introduced because it produces the *Ergot*, which is by many botanists considered a morbid condition of the grain of Rye. I however agree with those who regard this substance as a fungus; see *Spermoedia Clavus*.

1296. Bromus mollis *Linn.* Mr. Pereira states upon the authority of Mr. Loudon that the grains of this plant bring on giddiness in the human species and quadrupeds, and are fatal to poultry.

1297. Bromus purgans *Linn.* in Canada, and

1298. Bromus catharticus *Vahl.*, a Peruvian plant, are said, the one to be emetic, the latter purgative; but, as Mr. Pereira remarks, these statements require further proof, for Bromus secalinus, which was asserted by some writers also to be poisonous, has been found by Cordier to be innocuous. *Medical Gazette* xvii. p. 4.

1299. Festuca quadridentata *HBK.* i. 154. t. 160. *Pereira in Med. Gaz.* xvii. 5. fig. 6. — Sesleria quitensis *Spreng syst.* i. 329. — Quito.

Humboldt tells us that this plant is very poisonous, and was fatal to animals; it is called Pigouil by the natives of Quito.

1300. Avena sativa *Linn.* yields Embden and other groats, a common article of food among the sick; but it is scarcely medicinal.

ANDROPOGON.

Spikelets in pairs, the terminal ones in threes; one complete and awned, the other 1 or 2 withering, sterile, awnless (in most cases); the former 2-flowered, the upper floret being neuter with 1 palea, the lower ♂, or rarely ♀ with 2 paleæ. Glumes 2, awnless, becoming hard and leathery. Paleæ smaller, hyaline, the lowest in the ♂ with a very long awn. Stamens 3. Ovary smooth. Styles 2, terminal; stigmas feathered with simple toothletted hairs. Scales 2, truncate, usually smooth. Caryopsis smooth, loose, wrapped up in 2 paleæ and glumes. *Kunth.*

1301. A. Ivarancusa *Phil. trans.* lxxx. 284. t. 16. *Roxb. fl. ind.* i. 276. — Iwarancussa *As. Research.* iv. 109. — Skirts of the northern mountains of India.

Root perennial, the principal parts thicker than a crow's quill, and marked with circular scars, from which issue many small, firm aromatic fibres. Culms erect, generally simple, from 3 to 6 feet high, smooth in every part, not hollow, but filled with a light spongy substance. Leaves near the root longer than the joints of the culm, their margins hispid when the finger is drawn backwards over them, otherwise smooth in every part. Panicle axillary, and terminal, or the whole inflorescence may be reckoned a long linear, erect, or drooping, interrupted panicle, composed of numerous (many of them proliferous,) fascicles of slender, pedicelled, thin spikes of 5 joints; each fascicle is furnished with its own proper boat-shaped spathe, besides many chaffy bracts within it among the insertions of the pedicels; and a proper

spathe to each pair of spikes. Flowers on the body of the rachis in pairs; one awned, hermaphrodite, and sessile; the other awnless, male, and pedicelled; the terminal florets are 3, 1 hermaphrodite, sessile, and awned, the other 2 male, pedicelled and awnless. Hermaphrodite. Glumes 2, 1-flowered, at the base surrounded with wool, as are also the rachis, and proper pedicels. Paleæ 2, fringed; the inner 2-parted, with a short arista in the fissure. Scales 2, minute, embracing the ovary laterally. Male glumes as in the hermaphrodite. Palea single. — This has been said to yield grass oil; but Dr. Royle denies it: see No. 1303.

1302. A. Schœnanthus *Linn. sp. pl.* 1481. *Vent. cels.* t. 89. *Roxb. fl. ind.* i. 274. *Kunth. agrost.* 493. — (*Rheede* xii. t. 72. *Rumph.* v. t. 72. f. 2.) Σχοινος, *Dioscorides.* — Arabia, only cultivated in India *Roxb.* (Lemon Grass.)

Perennial, erect. Panicle somewhat secund, linear, leafy. Spikelets in pairs. Common pedicel furnished with a spathe, and partial pedicels and spathes. Florets all awnless. Male floret with only 1 valve. — Fresh leaves much used in India as a substitute for tea. The full grown leaves roasted are considered by Indian practitioners as an excellent stomachic. The whole plant has an aromatic bitter flavour.

1303. A. Calamus aromaticus *Royle essay* p. 34.—Καλαμος αρωματικος, *Dioscorides.* — India.

Known only from a short note by Dr. Royle, who states that it, and not A. Ivarancussa, produces the fragrant and stimulant *Grass oil* of Namur, and who conjectures it to have been the "sweet cane" and the "rich aromatic reed from a far country" of Scripture. It is used in India as an external application in rheumatism, in the same way as Cajeputi. It is also given as a stimulant.

SACCHARUM.

Spikelets all fertile, in pairs, the one sessile, the other stalked, articulated at the base, 2-flowered; the lower floret neuter, with 1 palea, the upper ♂ with 2 paleæ. Glumes 2, membranous. Paleæ transparent, awnless; those of the minute, unequal. Stamens 3. Ovary smooth. Styles 2, long; stigmas feathered, with simple toothletted hairs. Scales 2, obscurely 2- or 3-lobed at the point, distinct. Caryopsis smooth? loose? *Kunth.*

1304. S. sinense *Roxb. corom.* iii. t. 232. *fl. ind.* i. 239. *Kunth. agrost.* 474. — China.

Stem solid, erect, jointed, from 10 to 15 feet high, the greatest part covered with the sheaths of the leaves; joints from 4 to 8 inches long, and from 2 to 3 inches in circumference, colour pale brownish yellow. Leaves sub-bifarious, tapering from the base to a long, fine, point, plane, smooth on both sides; the margins armed with numerous, small, very acute spines pointing forward; length from 2 to 3 feet, and about an inch and a half broad at the base. Sheaths smooth, with a small ligula. Panicle ovate, erect, branches simple and compound, subverticillate, reclinate, long and slender. In S. officinarum the branches of the panicle are scattered over the common rachis and are decom-

pound, and supra-decompound; glumes surrounded by wool. Paleæ 2, on the same (anterior) side, the inner one very small. Scales 2, large, broad cuneate, crenulate, fleshy, occupying the two posterior sides of the ovary, opposite to the two paleæ. *Roxb.* — From this Chinese sugar is made.

1305. S. officinarum *Linn. sp. pl.* 79. *Tussac. fl. des. Ant.* i. t. 23. *Roxb. fl. ind.* i. 237. *Kunth. agrost.* 474. — Cultivated in both Indies, but its native country uncertain. (Sugar cane.)

Stems solid, from 6 to 12 feet high, yellow, purple, red or striped. Leaves flat. Panicle terminal, spreading, erect, oblong, from 1 to 3 feet long, gray from the quantity of long loose hairs that surround the florets; the branches alternate and very spreading. Rachis striated. Florets ♂ in pairs. Glumes smooth. Palea smooth, membranous, pink. — The sugar cane is usually reckoned a medicinal plant, although it hardly deserves a place in a Medical Flora. Dr. Chisholm however says that its juice is the best antidote to arsenic.

*** A great many other species have been named as possessing medicinal properties, but they either are not well authenticated, or appear to be unimportant. It is uncertain whether the *Carapoucha*, or *Carapullo*, cited by Mr. Pereira from Frezier as a narcotic grass, is really of this order. I cannot trace the name, and the only Lima plant that I find bearing a name at all like it is Physalis pubescens, which according to the Flora Peruviana is there called *Capuli*.

CYPERACEÆ.

Nat. syst. ed. 2. p. 384.

No plants of this order appear of any medicinal consequence; the following have, however, been named as medical plants, among several others.

1306. Cyperus longus *Linn.* as a stomachic.

1307. Cyperus rotundus *Linn.* as a stomachic. General Hardwick says that its tubers have been given with benefit in cholera.

CAREX.

Flowers unisexual, imbricated in cylindrical or ovate heads. ♂. Bracts single, triandrous, withering and dry. ♀. Bracts permanent, solitary, mucronate. Glumes 2, united into a compressed bifid utricle, containing a compressed or triangular digynous or trigynous fruit.

1308. C. arenaria *Linn. sp. pl.* 1381. *Eng. Bot.* t. 928. *Smith Eng. Fl.* iv. 86. — Sandy sea coast of Europe.

Rhizoma rootlike very long and cordlike, spreading in the loose sand to a great extent, branching at the extremity, and sending out from the knots many shaggy fibres. Hence it powerfully binds the sand together, forming banks which resist the force of the ocean. Stems terminal, solitary, about a foot high, erect, except in a driving sand, triangular; rough-edged in the upper part; leafy below. Leaves several, flat, rough-edged, taper-pointed, about as tall as the stem. Spike erect, 1½ or 2 inches long, of many, more or less crowded, roundish-ovate, brown spikelets; the upper ones consisting almost entirely of male florets, with 3 stamens; lower principally of fertile ones, with 2 sessile stigmas, the latter being always inferior. Bracts lanceolate, acute. Utricle ovate, ribbed, flattened, bordered in its upper half with a dilated rough-edged membrane, and terminating in a cloven beak. There is always a bristle-pointed leaf, under one, or more, of the lower spikelets. *Smith.* — The creeping stems are reported to be diaphoretic, and to be possessed of demulcent and alterative powers. They are collected on the continent, and sold under the name of *German Sarsaparilla.*

1309. C. hirta *Linn. sp. pl.* 1389. *E. Bot.* t. 685. *Smith Eng. Fl.* iv. 125. — Common in wet places, by the sides of ditches, &c. in Europe.

Stem rootlike, creeping extensively, with long, stout, scaly runners, and densely shaggy roots. Whole herb clothed, more or less copiously, with fine, soft, shaggy hairs, which occasionally disappear almost entirely, in wet situations, except at the top of the sheaths of the leaves, never quite smooth, and usually thickly bearded. Stem erect, 2 feet high, leafy, with 3 sharp rough angles. Leaves scarcely so tall, upright, flat, rough-edged, pointed, most hairy beneath. Bracts like the leaves, their sheaths, which are often smooth, embracing nearly the whole of each flowerstalk. Male spikes 2 or 3, lanceolate, erect, light-brown, their filmy-edged scales pointed; lower ones awned; female 2 or 3, distant stalked, erect, cylindrical, or somewhat ovate, about an inch long; their scales ovate, smooth, membranous, keeled, with long, slender, rough awns. Stamens 3. Stigmas 3. Utricle ovate, tawny, ribbed, hairy, tumid all round, though scarcely inflated; the beak broad, rough, deeply cloven, acute. Grain roundish, with 3 angles, tipped with part of the style. *Smith.* — This has a reputation like that of the last, and is said to be administered with advantage in rheumatic and cachectic affections.

1310. C. intermedia *Gooden.* (disticha *Huds.*). To this are assigned the same properties as to the two last.

XYRIDACEÆ.

Nat. syst. ed. 2. p. 388.

XYRIS.

Head composed of roundish, imbricated, very compact, 1-flowered scales. Sepals 3. Petals 3, much larger, perishable, equal, waved. Hypogynous scales 3, bifid. Capsule 1-celled, 3-valved. Seeds numerous on parietal receptacles.

1311. X. indica *Linn. sp. pl.* 62. *Vahl. symb.* ii. 7. *Willd.* i. 254. *Roxb. fl. ind.* i. 179. — (*Rheede* ix. t. 71.) — Low clayey soils in Bengal and Coromandel.

Root fibrous, annual. Leaves radical, bifarious, straight, sword-shaped, on 1 edge slit into a sheath for the scape, pointed, smooth; from 6 to 12 inches long. Scape naked, round, striated, erect, length of the leaves, each supporting a round, flower-bearing head. Flowers a beautiful bright-yellow. Bracts or scales 1-flowered, orbicular, concave, hard, smooth. Calyx 3-leaved, hid within the scale, membranous. Petals 3, each supported on an unguis just long enough to raise their expanding oval crenate borders above the scales. Barren filaments inserted alternately with the petals round the base of the ovary; apex 2-cleft, each division ending in a pencil of fine yellow hairs adhering firmly at the cleft to the edges of the petals, near the apex of the claws. Filaments 3, short, broad, erect, inserted on the inside of the apex of the claws of the petals. Anthers twin, erect, united by a continuation of the filament. Ovary superior, 3-sided. Style length of the claws of the petals, from thence 3-cleft. Stigma torn. Capsule 3-valved, 1-celled. Seeds numerous, attached to a keel down the inside of each valve. *Roxb.* — The natives of Bengal consider this of great value, because they think it an easy, speedy, and certain cure for the ringworm. Rheede says the leaves are used for this purpose mixed with vinegar; and the leaves and roots boiled in oil are taken against leprosy.

FILICALES.

Nat. syst. ed. 2. *p.* 399.

ACROSTICHUM.

Thecæ clustered, covering the lower side of the leaf, or both sides. Indusium none.

1312. A. Huacsaro *Ruiz in Lamb. cinch.* 128. — Cold elevated hills of Peru, in the provinces adjoining the Cordilleras.

Rhizoma horizontal, creeping, branched, about 2 feet long, covered over by the leafstalks which curve upwards and produce the appearance of a kind of cord or braid. Sterile leaves more than 1½ foot long, flat; fertile ones narrower and almost twice as long, with the midrib carinated on both sides; stalk semicylindrical, ramentaceous. Sori intermixed with hairs, ferruginous, or sometimes blackish, covering all the back of the fertile leaves. — This plant is called *Huacsaro* in Peru, and *Calaguala m diana* or *Cordoncillo* by the Spanish settlers. The rhizoma n cold infusion, and decoction, yields a red colour and a slight astringent taste. Very inferior in action to the true Calaguala (Polypodium Calaguala). *Ruiz.*

POLYPODIUM.

Thecæ placed on the veins, collected in roundish sori, which are scattered or arranged in rows. Indusium none.

1313. P. Calaguala *Ruiz in Lamb. cinch.* 120. t. 2. — Cold parts of the Alps of Peru, in clefts and on the side of rocks.

Rhizoma prostrate, creeping, flexuose, covered with spreading ramenta; after slow desiccation dark ash-colour, when the ramenta are removed, and pale citron-colour with a compact texture in the inside. Leaves placed in 2 rows alternately on the upper side of the rhizoma, linear-lanceolate, stiff, quite smooth, from 6 inches to 1 foot long, revolute at the margin, dotted with white on the upper side; stalk naked; veins reticulated. Sori round, unequal, in 1 or more rows on each side of the midrib.— Called *Ccallahuala* or *Calaguala* in Peru. The rhizoma when dried has great deobstruent, sudorfic, antivenereal and febrifuge virtues. It is used in decoction or infusion, allowing 1 ounce of the rhizoma to 6 pints of water boiled down to 3 pints. Seldom to be had genuine in Europe. If genuine it is extremely bitter. *Ruiz.*

1314. P. crassifolium *Linn. sp. pl.* 1543. *Ruiz in Lamb. cinch.* 125. — Phyllitis maculata amplissimo folio *Petiv. Fil.* p. 6. f. 8. — Mountains and woods of Peru, in gravelly and rocky naked warm situations.

Rhizoma compressed, thick, horizontal, brittle, green, covered with deciduous membranous ramenta. Leaves in 2 rows, placed alternately

on the upper side of the rhizoma, lanceolate, plane, slightly undulated, thick, stiff, brittle, shining, from 9 inches to 3 feet long, covered on the upper surface with fine pellucid dots; stalk long, semicylindrical, naked; veins horizontal. Sori round, in transverse simple lines. — Called *Puntu-puntu* in Peru. The rhizoma in infusion and decoction is employed as a sudorific. The samples should be compact, heavy, difficult to cut, of even fracture, red within, rusty or chesnut-coloured without. *Ruiz.*

ADIANTUM.

Thecæ placed on the distinct points of the veins, in a linear or point-like receptacle, arranged in marginal sori. Indusia continuous with the edge of the leaf, united to the receptacle, opening inwards.

1315. A. Capillus Veneris *Linn. sp. pl* 1558. *E. Bot.* t. 1564. *Smith Eng. Fl.* iv. 320. — South of Europe common; more rare in the North. (Maidenhair.)

Rhizoma creeping, blackish, shaggy. Leaves 6–12 inches high, or much more, erect or drooping, alternately and doubly pinnate; their stalks slender, purplish-black, smooth and polished; the alternate ones quite capillary. Leaflets wedge or fan-shaped, entire at the base, the upper or outer margin variously jagged and lobed; when barren sharply serrated, when fertile with each segment terminated by a roundish, flat, brown, thin indusium. — The rhizoma, which is slightly astringent and aromatic, is considered pectoral; but the decoction if very strong is reported to be emetic. Mixed with syrup it forms *Capillaire.*

1316. A. pedatum *Linn. sp. pl.* 1557. *Schkuhr. crypt.* 107. t. 115. *Willd. sp. pl.* v. 438. — North America.

Leaves pedate; divisions pinnate; pinnæ halved, oblong, lunate, incised at the upper edge; the sterile segments toothed. Sori linear. Petiole smooth. — According to Smith it is this species that is used in the manufacture of Capillaire, and not the last; but as it does not grow in the South of Europe I do not see how this statement can be correct.

PTERIS.

Thecæ arising from the points of veins, placed on a nerve-like receptacle running along the edge of the leaf, forming an uninterrupted marginal sorus. Involucres continuous with the edge of the leaf, scarious, opening inwards.

1317. P. aquilina *Linn. sp. pl.* 1533. *E. Bot.* t. 1679. *Smith Eng. Fl.* iv. 318. — Heaths, thickets, woods, &c. in Europe. (Brake.)

Rhizoma long, tapering, creeping; externally black. Leaves erect, from 1 to 6 feet high, repeatedly compound, with horizontally spreading divisions, whose ribs are smooth; the primary ones nearly opposite; the next more alternate, deeply pinnatifid, with crowded, lanceolate, bluntish, convex, parallel segments; the odd one generally much the largest; lateral ones sometimes greatly diminished; all of a light bright

green; revolute at the margin, which is brownish, and slightly crisped or wavy, sheltering the dense linear masses of tawny thecæ. Barren leaflets pale and hairy at the back. The main stalk is angular and sharp-edged, wounding the hands severely if plucked incautiously. When cut across, the rhizoma has a branched appearance, resembling a spread-eagle, whence the Latin name. *Smith.* — Rhizoma astringent and said to be anthelmintic. It has been used, and with some success, as a substitute for hops. In the Canaries a miserable sort of bread is made by mixing the flour obtained by grinding the rhizoma, with barley meal.

NEPHRODIUM.

Thecæ placed in the middle of a vein, forming roundish sori placed in rows. Indusium reniform.

1318. N. Filix mas *Presl.* — Aspidium Filix mas *Swartz. syn. 55. E. Bot.* t. 1558. *Smith Eng. Fl.* iv. 288. Polypodium filix mas *Linn. sp. pl.* 1551. — All over the North of Europe.

Rhizoma tufted, large, scaly. Leaves several, 3 feet high, erect, disposed in a circle, lanceolate, and leafy nearly to the bottom; their stalks and midribs scaly, or chaffy, throughout; divisions alternate, taper-pointed, pinnate; leaflets numerous, crowded, sessile, for the most part distinct, occasionally somewhat combined at the base, oblong, obtuse, crenate throughout, the lateral notches broadest and most shallow, the terminal ones more crowded and acute, without any terminal bristles; both sides smooth, and destitute of glandular globules, but there is a depression on the upper one, over the insertion of each sorus. Sori circular, tawny, ranged in simple, close, short rows, near the partial midrib, and scarcely occupying more than the lower half of each leaflet. Indusium circular, durable, crenate, tumid, with a cleft terminating in the central depression. Thecæ numerous, shining-brown, prominent all round for a little beyond the indusium. *Smith.* — Rhizoma used as an anthelmintic. The *oil of Fern*, extracted by ether, is the most efficacious form in which it is administered.

OSMUNDA.

Thecæ collected into a panicle, or along the edge of the altered frond, opening vertically, bound by a broad dorsal wing.

1319. O. regalis *Linn. sp. pl.* 1521. *Eng. Bot.* t. 209. *Smith Eng. Fl.* iv. 327. — Bogs, woods and wet meadows in Europe. (Osmund Royal.)

Rhizoma tuberous, hard, scaly, beset with numerous fibres, and having in the centre a whitish core. Leaves several, erect, 2 or 3 feet high, doubly pinnate, smooth, bright-green; the primary divisions from 6 to 10, nearly opposite, hardly a span long; leaflets more numerous, often decidedly alternate, sessile, or nearly so, oblong, bluntish, entire, or obscurely crenate with 1 rib, and numerous transverse veins; the base dilated, heart-shaped, or somewhat lobed. Some of the upper

leaflets are cut, and as it were partially transmuted into dense clusters, or spikes, of thecæ, several of the upper divisions of the leaf consisting entirely of such thecæ, composing a compound panicle. Each theca is light brown, veiny, supported by a short stalk. *Smith.* — Rhizoma tonic and styptic, and said to have been found serviceable in cases of rachitis.

LYCOPODIACEÆ.

Nat. syst. ed. 2. *p.* 403.

LYCOPODIUM.

Thecæ unilocular, all of one form, or of 2 different forms; that which contains powder somewhat reniform and 2-valved, the other roundish, 3- or 4-lobed, 3- or 4-valved.

1320. L. clavatum *Linn. sp. pl.* 1564. *E. Bot.* t. 224. *Smith Eng. Fl.* iv. 331. — Mountainous heaths and moors, all over Europe.

Roots of several strong scattered fibres. Stem procumbent, trailing, branching, leafy, several feet in length. Leaves crowded, curved upwards, linear-lanceolate, flat, ribless, smooth, deep green, partly serrated, tipped with a capillary point; those of the branches erect; the upper ones loosely dispersed. Spikes terminal, usually in pairs, rarely 1, or 3, densely beset with shortened, dilated, ovate, entire, long-pointed leaves, or scales, in whose bosoms the small, sulphur-coloured thecæ are situated. *Smith.* — The dust of the thecæ is inflammable, and is employed in some parts of Europe to produce artificial lightning on the stage. The decoction of the plant is said to be more serviceable than any other known means in removing Plica polonica. The powder is also used to prevent excoriation in children.

1321. L. Selago *Linn. sp. pl.* 1565. *E. Bot.* t. 233. *Smith Eng. Fl.* iv. 333. — Common in Europe in mountainous heaths.

Root fibrous. Stems a span high, composing dense tufts, level at the top, each once or twice forked, cylindrical, densely leafy all over. Leaves uniform, crowded, in 8 rows, of a bright shining green, permanent, lanceolate, entire, acute, pointless, moderately spreading every way. Thecæ on the uppermost shoots, axillary, kidney-shaped, uniform. *Smith.* — In the Highlands of Scotland it is made into an irritating ointment which is applied with advantage to the neighbourhood of the eyes as a counter irritant. This unguent is also employed to dress foul ulcers, and might be used for keeping blisters open instead of Savin. Internally administered the Selago acts violently as an emetic and cathartic; the Highlanders we are told notwithstanding give it in infusion; but if the dose is not small it is followed by serious giddiness and convulsions. Linnæus says the Swedes find the decoction serviceable as a detergent lotion, and in destroying the vermin that infest swine and other animals. *Burnett.* Dr. Winkler says its effects appear to be sometimes irritant, but more generally narcotic in their nature.

1322. L. rubrum *Chamisso in Linnæa* viii. 389. This has lately been sent from the Caraccas under the name of *Atum Condinadum*, as a medicinal plant, along with Cuichunchulli, but I do not know for what purpose it is used. Its bright red colour is very remarkable.

FUNGACEÆ.

Nat. syst. ed. 2. p. 419.

*** There is only one plant of this order of which much use is made for the sake of its medicinal properties, namely the Spermoedia Clavus or Ergot; but there are many nutritious and a great quantity of poisonous species. It would however extend this work, already too long, beyond any moderate limits if such plants were included; and therefore the reader is referred to books especially treating upon fungi for information concerning all that may interest him, except the above-named medicinal plant, and another or two also used medicinally in extra European countries.

SPERMOEDIA.

A solid elongated mass, growing from the inside of the ovary of grasses, rootless, of a firm, mealy substance, with a concrete, scaly or powdery crust. The interior composed of flocci and sporules firmly compacted into a solid homogeneous mass.

1323. S. Clavus *Fries Syst. mycol.* ii. 268. — Clavi Siliginis *Lonicer Bot. herb.* Secalis mater *Thal. herc.* p. 47. Secale luxurians *Bauh. pin.* p. 23. Grana Secalis degenerati *Brunner in eph. nat. cur. dec. 5. ann. 2.* p. 348. Secale cornutum *Bald. diss. Jen.* 1771. Sclerotium Clavus *DC. mem. mus.* 416. t. 14. f. 8. *Fries monogr.* 43. — Grains of Rye; also of Agrostis and several other grasses according to Fries. (Ergot.)

A curved purplish black body, of a cylindrical form, rounded at its extremities, of a firm horny texture, dirty white inside, covered with a powdery substance externally, the nature of which is not ascertained. The mass appears to the eye, even when assisted by moderately high magnifying powers, to be a homogeneous substance, in which no organisation can be detected. But if sliced very thin, and examined in water by a very powerful microscope, the mass is found to consist of fine flocci or threads, branched, and bearing spherical sporules as transparent as the flocci themselves; the whole consolidated into a compact substance. — A dangerous poison if taken into the body mixed with food, producing violent spasmodic convulsions and dry gangrene. If taken in doses of as much as two drachms, giddiness, headach, and flushed face are produced, together with pain and spasms in the stomach, nausea and vomiting, with colic, purging and a sense of weight and weariness of the limbs. In pregnant women it is also found to excite uterine action in a very remarkable manner, bringing on abortion or facilitating parturition; hence ergot is called by Mr. Pereira a parturifacient. In medicine it is extensively employed to promote uterine pains during the process of parturition, to produce the expulsion of the placenta, contraction of the uterus and to stop uterine hæmorrhage. To a more limited extent it

has been used, and as it is said with advantage, in epistaxis, hæmoptysis, hæmaturia, and hæmatemesis, to expel clots and polypi from the uterus, in leucorrhœa, puerperal convulsions, and amenorrhœa.

Ergot is said to be adulterated with plaster of Paris casts, coloured to resemble it. In the last edition of the London Pharmacopœia it is referred to the Acinula Clavus of *Fries Syst. mycol.*; but Fries has no such plant in any of his works; and the only species of Acinula known, A. candicans, is found on the rotten leaves of the common Alder, and among melting snow; its organisation is quite of another kind from that of Spermœdia, and Fries, who regards the latter as a morbid state of the grain of certain grasses, considers Acinula as a true fungus.

1324. S. Maydis *Fries syst. mycol.* iii. *Index.* — In Colombia in the female flowers of Zea Mays.

An Ergot attacks the Indian Corn in Colombia, and is stated by Roulin (*Ann. des. Sc.* xix. 279.) to cause a loss of the hair and teeth on the part of both animals and men that eat it; mules fed upon it lose their hoofs, and poultry lay eggs without shell; its action upon the uterus is said to be as powerful as that of Rye ergot, or perhaps more so. This ergot seems unknown at the Caraccas, where, at the instance of Sir R. K. Porter, Dr. Vargas has been so obliging as to institute some inquiries upon the subject. Maize thus infested is called *Mais peladero*.

PACHYMA.

Oblong-roundish, rootless; rind distinct, thick, woody, scaly or tuberculated, homogeneous and between fleshy and corky inside. Fructification unknown. *Fries.*

*** Fries suspects that the supposed species of this genus may be the early state of other fungi.

1325. P. Cocos *Fries syst.* ii. 242. — Sclerotium Cocos *Schweinitz.* — Under the soil of sandy Pine barrens in Carolina.

Elliptical or somewhat reniform, as large as a man's head, very like a Cocoa nut in appearance. Rind an inch thick, between fibrous and scaly, hard, of the same colour as the roots of the Pine-trees. Inside uniform, smooth, filled with a fleshy corky matter having a mealy fungus-like smell; when full grown pink. — Used in Carolina "ad morbos sanandos." *Fries.*

1326. P. Tuber regium *Fries syst.* ii. 243. — (*Rumph.* 120. t. 57. f. 4.) — Under ground in the Moluccas.

The size of the fist, or even as large as a child's head. Rind tuberculated, pitted, without fibres, resembling a stone, on account of its dark earthy colour. Inside white, chalky, soft, uniform, scentless and insipid. — Used in the medicine of Eastern nations against diarrhœa, pains in the face, fevers, &c., called *Uba Radja*, or *Culat batu* by the Malays, *Ulathatu* in Amboyna, *Djamor bonkang* in Java. *Fries.*

1327. The Chinese have a fungus called *Hoelen*, the size of a child's head, and considered a valuable medicine, which is supposed to be another species of the genus Pachyma.

LICHENACEÆ.

Nat. syst. ed. 2. p. 426.

*** The various Lichens described by M. Fée as characteristic of the different kinds of Cinchona bark are here omitted because I doubt very much whether they are sufficient for the purpose he has applied them to. The characters of the genera and species here introduced are chiefly borrowed from Sir William Hooker's British Flora.

VARIOLARIA.

Thallus crustaceous, membranaceous, adnate, spreading, uniform. Shield a suborbicular, scutelliform cup, formed of the thallus, filled with a powdery or flocculent substance, which covers an immersed waxy disk containing imbedded thecæ.

1328. V. discoidea *Pers. Hooker B. F.* ii. 169. — V. amara *Achar. Synops.* 132. Lichen discoideus *E. B.* t. 1714. — Common on the bark of trees, and occasionally on pales, walls and rocks.

Crust orbicular, somewhat tartareous, thickish, glaucous white surrounded by a zonate border of various colours. Shields numerous, flat, with a thick border; powder snowy white. — Whole plant intensely bitter: has been recommended as a remedy for intermittent fevers.

1329. V. faginea *Pers. Hooker B. F.* ii. 169. — V. communis β. *Achar. syn.* 130. Lichen fagineus *E. Bot.* 1713. — Common on the bark of trees especially old Beech and on pales.

Crust orbicular, somewhat tartareous, thickish, glaucous-white, surrounded by a zonate border of various colours. Shields very abundant, convex, with an obsolete border, powder snowy-white. — Properties as in the last species.

PARMELIA.

Thallus foliaceous, membranaceous or coriaceous, spreading, lobed and stellated, or laciniated, more or less fibrous beneath. Shields (scutellæ) orbicular, beneath formed of the thallus, free, fixed only by a central point, the disk concave, coloured, the border formed by the inflexed thallus.

1330. P. parietina *Ach. syn.* 200. *Hooker B. F.* ii. 204. — Lichen parietinus *Eng. Bot.* t. 194. — On trees and walls, abundant.

Thallus orbicular, bright yellow, the lobes marginal, radiating, appressed, rounded, crenate and crisped, granulated in the centre, beneath paler and fibrillose. Shields deep-orange, concave, with an entire border — Used as a remedy for intermittent fevers, on account of its bitterness.

STICTA.

Thallus foliaceous, coriaceo-cartilaginous, spreading, lobed, free and downy beneath, with little cavities or hollow spots (cyphellæ) often containing a powdery substance. Shields (scutella) beneath formed of the thallus, to which they are appressed and fixed by a central point, the disk coloured, plane, surrounded by an elevated border formed of the thallus.

1331. S. pulmonacea *Ach. syn.* 233. *Hooker B. F.* ii. 206. — Lichen pulmonarius *E. Bot.* t. 572. — On the trunks of trees in mountainous countries, frequently investing them with its large shaggy looking fronds.

Thallus wide spreading, olive-green, pale brown when dry, pitted and reticulated, smooth or bearing powdery whitish warts in the reticulations, and frequently elongated, bearing scattered or tufted granules; deeply laciniated and broadly lobed and sinuated, beneath clothed with brownish downy fibres, the swellings bare. Shields mostly marginal, red-brown with a thick border. — Employed in pulmonary affections; its nutritious properties resemble those of Cetraria islandica. In Siberia it is used for giving a bitter to beer.

PELTIDEA.

Thallus foliaceous, coriaceous or membranaceous, spreading, lobed, with woolly veins beneath, the lobules fertile. Shields (peltæ) suborbicular, adnate on the upper side of the lobules or proper portions of the thallus and having a border formed of the thallus.

1332. P. aphthosa *Ach. syn.* 238. *Hooker B. F.* ii. 215. — Lichen aphthosus *E. Bot.* t. 1119. — Moist shady alpine rocks among moss, and generally near water.

Thallus bright green, smooth, sprinkled with brown warts, and having broad rounded lobes, the fertile ones contracted, their sides reflexed. Shields large, ascending, red brown with a jagged border. — Said to be purgative, and anthelmintic.

GYROPHORA.

Thallus foliaceous, coriaceous or membranaceous, fixed by the centre, peltate. Shields (tricæ or gyromata) orbicular, subscutelliform, sessile and adnate, covered by a black membrane, the disk marked with concentric circles or plicæ, with a border of its own substance.

1333. G. proboscidea *Ach. syn.* 64. *E. Bot.* t. 2484. *Hooker B. F.* ii. 217. — Mountain rocks.

Thallus simple, membranaceous, rugose, with elevated reticulations of

a smoky brown-colour, lobed and erose at the margin, beneath subfibrillose and paler. Shields rather convex, variously plaited. — This and the following constitute a part of the *Tripe de Roche*, on which travellers in the Arctic regions of America have been forced to live in cases of emergency. It is nutritious; but mixed with a disagreeable bitterness, and productive of severe colic, and other distressing local complaints.

1334. G. cylindrica *Ach. syn.* 65. *Hooker B. F.* ii. 218. — Umbilicaria crinita *Hoff. Lich.* t. 44. (*Dill. musc.* t. 29. f. 116.) — Common on mountain rocks.

Thallus coriaceous, simple, or many-leaved, slightly wrinkled, dark bluish or greenish-grey, variously lobed and plaited, coarsely ciliated at the margin, with black branched wiry bristles, beneath smooth, pale, with scattered branching fibres. Shields elevated, nearly plane, variously plaited.

CETRARIA.

Thallus foliaceous, cartilagineo-membranaceous, ascending and spreading, lobed and laciniated, on each side smooth and naked. Shields orbicular, obliquely adnate with the margin of the thallus, the lower portion being free, (not united with the thallus;) the disk coloured, plano-concave, with a border formed of the thallus and inflexed.

1335. C. islandica *Ach. syn.* 229. *Hook. B. F.* ii. 221. — Lichen islandicus *E. Bot.* t. 1330. *Woodv.* t. 265. — On the ground in exposed situations in northern countries. (Iceland Moss.)

Thallus erect, tufted, olive-brown, paler on one side, laciniated, channelled and dentato-ciliate, the fertile laciniæ very broad. Shields brown, appressed, flat, with an elevated border. — Notwithstanding the presence of so large a quantity of bitter principle in this, that Sir John Franklin and his party could hardly eat it, although in a state approaching starvation, it is a favourite substance with some practitioners in affections of the pulmonary and digestive organs, particularly in phthisis, chronic catarrh, dyspepsia and chronic dysentery. It is frequently given to sick persons as an alimentary substance, the bitter having been first removed by washing in a weak alkaline solution. The aqueous decoction, if made sufficiently strong, forms a jelly when cold; when flavoured with a little white wine it is an exceedingly pleasant diet. *Pereira.*

1336. C. nivalis *Ach. syn.* 228. *Hooker B. F.* ii. 221. — Lichen nivalis *Eng. Bot.* t. 1994. — Mountains in northern countries.

Thallus pale sulphur-coloured, orange at the base, erect, tufted, nearly plane, pitted and reticulated, laciniated, its segments multifid, crisped, crenato-dentate, divaricated, often warted at the point. Shields pale flesh-colour, their border crenulated. — Has similar properties to the last.

BORRERA.

Thallus cartilaginous, branched and laciniated, the segments free, generally grooved beneath, the margins frequently ciliated.

Shields orbicular, peltate, beneath formed of the thallus; the disk coloured and surrounded by the elevated inflexed border, formed also of the thallus.

1337. B. furfuracea *Ach. syn.* 222. *Hooker B. F.* ii. 223. — Lichen furfuraceus *E. B.* t. 984. — Trunks and branches of old trees, especially when decaying, and old pales.

Thallus spreading, ascending, greyish-green, farinaceous, the segments linear, attenuated, much divided and forked, the margin recurved, deeply grooved, rugged and almost black beneath. Shields scattered, very concave, inflated, red-brown with a thin reflexed border. — Reputed to be an astringent and febrifuge.

EVERNIA.

Thallus subcrustaceous, branched and laciniated, angled or compressed, cottony within ("intus stuppeus"). Shields orbicular, scutelliform, sessile; the disk concave, coloured, with an inflexed border formed of the thallus.

1338. E. Prunastri *Ach. syn.* 245. *Hooker B. F.* ii. 224. — Lichen Prunastri *E. Bot.* t. 859. — Trunks and branches of trees, common.

Thallus erect, greenish-white, much branched, pitted and rugged, flat; the segments linear, attenuate, somewhat grooved and paler beneath. Shields bright-brown, concave, elevated, with an inflexed border. — Recommended in pulmonary affections; also, as an astringent and febrifuge. It has a peculiar power of imbibing and retaining odours, and is in some request as an ingredient in sweet pots and ladies' sachets.

USNEA.

Thallus subcrustaceous, rounded, branched, generally pendulous, with a central thread. Shields (orbillæ), orbicular, terminal, peltate, entirely formed of the substance of the thallus and nearly of the same colour, the circumference mostly without a border and (generally) ciliated.

1339. U. plicata *Ach. synops.* 305. *Hooker B. F.* ii. 226. — Lichen plicatus *E. B.* t. 237. — Common on old trees and park pales.

Thallus pendulous, smooth, pale, branches lax, much divided, subfibrillose, the ultimate ones capillaceous. Shields plane, broad, ciliated, the ciliæ slender and very long. — Mentioned as a remedy for hooping-cough.

CLADONIA.

Thallus somewhat shrubby, branched, rarely simple, leafy with scales, which are often evanescent, branches cartilaginous, rigid, fistulose, all attenuated and subulate, divided, fertile, generally perforated in the axils. Shields (cephalodia) sessile, orbicular, convex, capituliform, not bordered, fixed by the cir-

cumference, free beneath in the centre, the sides reflexed, uniform within.

1340. C. sanguinea *Martius ic. plant. crypt.* xxix. t. 11. f. 1. — Rocks and bark of bushes in Brazil.

Thallus leafy, very thick, imbricated; beneath scarlet frosted with white, above green and somewhat gelatinous. Lobes crenulated, ascending. Podetia nearly solid, cavernous, split into fingered lobes either wholly or at their apex only. Shields marginal, confluent, scarlet. *Martius.* — Rubbed down with sugar and water this is found to be an excellent remedy in Brazil, for aphthæ in children.

1341. C. vermicularis *Hooker. B. F.* ii. 234. — Cenomyce vermicularis *Ach. syn.* 278. Lichen vermicularis *E. B.* t. 2029. — On the ground in the northern parts of the world.

Podetia spreading horizontally, pure white, subulate, simple or slightly branched, branches tapering at each end. — Used in South America an a stomachic, under the name of *Contrayerba blanca.*

1342. C. rangiferina *Hooker B. F.* ii. 235. — Cenomyce rangiferina *Ach. syn.* 277. Lichen rangiferinus *E. Bot.* t. 173. — Moors, heaths and mountains, common. (Rein Deer Moss.)

Podetia erect, elongated, roughish, cylindrical, greenish-white, very much branched, the axils perforated, the branches scattered, often intricate, divaricated, the ultimate ones drooping. Shields subglobose, brown, on small erect branchlets. — One of the most nutritious of this order, and nearly free from the bitterness of some of the esculent kinds.

SCYPHOPHORUS.

Thallus foliaceous, imbricated. Podetia fistulose, cylindrical, dilated upwards, bearing cups, or attenuated and subulate; cups closed with a membrane or cleft at the extremity, often rayed in a somewhat digitated manner, the rays all fertile. Shields (cephalodia) convex, capituliform, not bordered, free in the centre beneath, arranged around the edges of the cup, the margin reflexed, uniform within.

1343. S. pyxidatus *Hooker B. F.* ii. 238. — Cenomyce pyxidata *Ach. synops.* 252. Lichen pyxidatus *E. B.* t. 1393. — Common on heaths, moors, and high land.

Thallus foliaceous, the segments crenulated, ascending. Podetia all turbinate, elongated, cup-bearing, at length granulated, warty, rough, greyish-green, cups regular, the margin at length proliferous. Shields brown. — This and the following have both the credit of being astringent and febrifugal.

1344. S. cocciferus *Hooker B. F.* ii. 240. — Cenomyce coccifera *Ach. syn.* 269. Lichen cocciferus *E. Bot.* t. 2051. — Common on heathy moors.

Thallus leathery, pale greenish-grey, mealy, the scales minute, lobed and crenated. Podetia elongated, turbinate, mealy, all cup-bearing; cups with their margins often radiated bearing the scarlet shields.

ALGACEÆ.

Nat. syst. ed. 2. p. 430.

FUCUS.

Frond plane, compressed or cylindrical, linear, dichotomous, coriaceous. Air-vessels when present innate in the frond, simple, large. Receptacles terminal, turgid, containing tubercles imbedded in mucus and discharging their spores (sporangia) by conspicuous pores. *Greville.*

1345. F. vesiculosus *Linn. sp. pl.* 1626. *E. Bot.* t. 1066. *Grev. Scott. Crypt. fl.* t. 319. *alg. britt.* 12. t. 2. — Sea shores very common. (Sea Wrack.)

Root a hard flattish disk. Frond a few inches to 3 or more feet in length, and 2–3 lines to 1 inch in width, flat, furnished with a midrib, occasionally twisted in a spiral manner, repeatedly dichotomous, the angles of the dichotomy acute, except when a solitary vesicle happens to be placed there; the sterile branches obtuse and often notched at the extremity. Air-vessels from the size of a pea to a hazel nut, in pairs, and situated at irregular intervals in different parts of the frond; sometimes 2 or 3 pair are arranged next to each other; they are rarely altogether wanting. Receptacles terminal, compressed, mostly ovate or elliptical, and about $\frac{1}{2}$ an inch long, but varying from nearly spherical to linear-lanceolate, and in length from $\frac{1}{4}$ of an inch to nearly 2 inches; they are also mostly in pairs, but are sometimes solitary and occasionally forked. The whole frond is proliferous in a remarkable degree in cases of injury, throwing out numerous new shoots from the injured part. *Greville.* — This has been employed as a local and constitutional agent. Dr. Russell recommended scrofulous swellings to be rubbed with the bruised vesicles and afterwards to be washed with sea-water, in order to produce the resolution and disappearance of the swellings. The effect produced appears to be owing to the iodine contained in the Fucus.

*** Fucus amylaceus *O'Shaughnessy*, in *Med. Gaz.* xxi. 566. — Eastern Coast of Bengal.

In the work above mentioned a short account is given of this plant, which is represented to be very nutritious and alimentary, entirely free "from the bitter principle which constitutes so great an objection to other Fuci." It has been found highly useful in asthmatic complaints, &c., and is called by the natives *Edible moss.* I can find no further record of this plant, which is possibly not a Fucus at all, but more probably allied to Gracilaria, from a species of which a delicate kind of food is procured in the Eastern Islands, or to Gelidium, which furnishes the eatable "birds' nests" of the Chinese.

GRACILARIA.

Frond cartilaginous, filiform, cylindrical or compressed, of a

dull red colour. Fructification; 1, capsules containing a mass of minute roundish seeds; 2, roundish or oblong simple granules imbedded in the frond of distinct plants. *Greville.*

1346. G. lichenoides *Greville.* — Sphærococcus lichenoides *Agardh. syst. alg.* 233. Fucus lichenoides *Turner Fuc.* t. 113. *f. a.* Plocaria candida *Nees hor. berol.* t. 6. — In the Indian Sea.

Frond cartilaginous, filiform, dichotomous; branches spreading, acute, somewhat fastigiate. Capsules hemispherical, scattered. *Agdh.* — Highly valued for food in Ceylon and other islands of the East.

1347. G. compressa *Grev. alg. britt.* 125. — Sphærococcus compressus *Agdh. syst. alg.* 233. Sphærococcus lichenoides *Grev. scott. crypt. fl.* vi. t. 341. — Devonshire.

Frond cartilaginous, brittle, between cylindrical and compressed, dichotomous; branches subdistichous, spreading, lax, gradually attenuated to a subulate point. *Grev.* — Very like the last; according to Mrs. Griffiths it makes an excellent pickle and preserve, when fresh.

1348. G. tenax *Greville.* — Sphærococcus tenax *Agdh. syst. alg.* 238. Fucus tenax *Turner Ann. Bot.* ii. t. 15. *hist. fuc.* t. 125. — Chinese seas.

Frond somewhat gelatinous, slippery, filiform, dichotomous. Branches spreading; the upper reflexed and acute. Capsules hemispherical, sessile, scattered *Agdh.* — Used very extensively by the Chinese for the same purposes as glue or gum arabic.

CHONDRUS.

Frond cartilaginous, dilating upwards into a flat, nerveless, dichotomously divided frond, of a purplish or livid red colour. Fructification, subspherical capsules in the substance of the frond, (rarely supported on little stalks) and containing a mass of minute free seeds. *Greville.*

1349. C. crispus *Lyngb. hydroph. dan.* p. 15. t. 4. *Greville alg. britt.* 129. t. 15. — Sphærococcus crispus *Agdh. syst. alg.* 219. Fucus crispus *Linn. syst. nat.* ii. 718. *Turner hist. fucor.* t. 216, 217. — Rocks and stones in the sea, very common. (Carrageen, Irish Moss.)

Root a disk throwing up tufts of many fronds. Fronds 2 to 12 inches high, very narrow and subcylindrical at the base, but immediately becoming flat, generally dilating from the base till it becomes 3 or 4 lines wide, and then dividing repeatedly and dichotomously, each division spreading, becoming narrower than the preceding one, and taking place at shorter and shorter intervals; the summits are bifid, the segments varying greatly in length, rounded or acute, straight or curved, and often twisted in such a manner as to give the curled appearance denoted in the specific name. Fructification roundish or roundish-oval, subhemispherical. Capsules imbedded in the disk of the frond, prominent on one side, and producing a concavity on the other, containing a mass of minute roundish red seeds. Substance cartilaginous, in some varieties approaching to horny, flexible and tough. Colour a deep purple-brown, often tinged with purplish-red and paler at the summit, becoming greenish, and at length white in decay. When dry it is considerably darker,

almost horny, and adheres imperfectly to paper. *Greville.* — Recommended as a popular remedy for pulmonary complaints, dysentery, scrofula and rickets, given in the form of a decoction, made by boiling an ounce in a pint and half of water or milk. It is nutrient, demulcent and emollient. *Pereira.* — On the coast of Ireland it is converted into size for the use of house-painters, and also employed in lieu of isinglass in the preparation of creams and other confectionary.

GIGARTINA.

Frond horny or cartilaginous, filiform, cylindrical, irregularly branched. Fructification uniform; spherical sessile capsules containing a globose mass of seeds. *Greville.*

1350. G. Helminthochorton *Greville.*— Sphærococcus Helminthochorton *Agdh. syst.* 235. Fucus Helminthochorton *La Tourette in Journ. phys.* 1782 *sept.* t. 1. f. 1. 10. *Turner hist. fucor.* t. 233. — Mediterranean sea. (Corsican Moss.)

Frond cartilaginous, terete, tufted, entangled. Stem filiform, creeping. Branches setaceous, somewhat dichotomous, marked indistinctly with transverse streaks. The lower part dirty yellow, the branches more or less purple. — Said to produce nausea and giddiness. It is used as an anthelmintic, and has been supposed to be particularly efficacious against the large round worm (*Ascaris lumbricoides*). It has also been recommended in cases of cancer, in consequence of Napoleon, during his imprisonment in St. Helena, having spoken of its efficiency in that disease.

APPENDIX.

List of the Native names by which the Asiatic species, included in this work, are known in the East Indies; extracted from *Roxburgh's Flora Indica*.

*** *A.* Arabic; *B.* Bengalee; *H.* Hindostanee; *P.* Persian; *S.* Sanscrit; *T.* Telinga.

52. Euryale ferox; Makana.
53. Myristica officinalis; Jay-phalu *S.*; Jaga-phul *B.*; Jouz-bewa *P.*
75. Ptychotis Ajowan; Bruhmadurbha, Yuvanika *S.*; Ajouan, Ajwan, Jouan *H.* and *B.*
90. Fœniculum Panmorium; Panmuhuree *B.*; Mudhoorika *S.*; Mayuri.
108. Anethum Sowa; Mishreya *S.*; Sowa, shuloopa, soolpa *B.*
138. Cissus setosa; Barubutsali *T.*
141. Terminalia Chebula; Haritaka *S.*; Hur, Harua *H.*; Kadukar *T.*
142. Terminalia citrina; Hurituki *B.*
143. Terminalia alata; Usna, Peeata-saluka *S.*: Aans *H.*; Peea-sal, Usan *B.*; Nella-madoo *T.*
144. Terminalia moluccana; Kala Drooma *S.*
147. Terminalia belerica; Vibhituka *S.*; Buhira *B.*; Be-ley-ley *A.*; Beley-leh *P.*; Tandra marum *Tam.*; Tani; Toandee *T.*
150. Melaleuca Cajuputi; Cajuputi, Daun kitsjil, Caju-Kilan.
161. Barringtonia racemosa; Samstravadi.
174. Luffa amara; Kerula *B.*; Sheti beera *T.*
183. Trichosanthes palmata; Mukhal *B.*; Kadi-danda *T.*
186. Trichosanthes cordata; Boome-Koomura *H.*
187. Trichosanthes cucumerina; Pada valam; Aduvee-putla *T.*
221. Carica Papaya; Papaja; Papeya *B.*
222. Chaulmoogra odorata; Chaulmoogra, Petarkura.
227. Stalagmitis ovalifolia; Ambul Choorka *Cingalese.*
244. Schmidelia serrata; Rakhal-phul *H.*; Tauatikee *T.*
245. Schleichera trijuga; Coughas; Zolim-buriki *Tam.*; May, Koatangha *T.*
269. Cavallium urens; Bulee *H.*; Kavalee *T.*
274. Kydia calycina; Choupultea *H.*; Pandikee *T.*
289. Vateria indica; Paenoe; Peini marum.
292. Shorea robusta; Sala, Uswukurnika *S.*; Sal *B.* and *H.*
294. Ammannia vesicatoria; Daud-maree *B.*; Aghun drapakoo *T.*
302. Xylocarpus granatum; Kandalanga *Tamul;* Kadul-gaha *Cingalese;* Pussoor *B.*
306. Soymida febrifuga; Soymida *T.*; Rohina *B.*; Wond-marum *Tamul.*
307. Cedrela Toona; Surenus; Toon, Lood *B.*
308. Chickrassia tabularis; Chickrassee *B.*
313. Bergera Konigii; Bursunga *B.*; Kari-vepa *T.*; Kamwepila *Tamul.*
314. Feronia elephantum; Kath-bel *B.*; Yellanga *T.*; Vallanga, Volamarum *Tamul.*

315. Ægle Marmelos; Maredoo *T.*; Willa-marvum *Tamul;* Bela *B.*
320. Spondias Mangifera; Amra *H.* and *B.*; Amatum *T.*
322. Zizyphus Jujuba; Kool *B.*; Bier *H.*; Rengha *T.*
340. Boswellia thurifera; Salaci *S.*; Salai *B.*; Luban H.
349. ?Commiphora madagascaerensis; Googgula *S.* and *B.*
351. Cicca disticha; Loda, Nori *B.*; Hurpurori, Chelmeri *H.*; Russa Userekee *T.*
353. Phyllanthus Niruri; Sada-hazur munee *H.* and *B.*; Nella userekee *T.*
354. Phyllanthus urinaria; Hazar munee *B.* and *H.*; Yerra userekee *T.*
355. Phyllanthus simplex; Uchi userekee *T.*
357. Cluytia collina; Woodacha-marum *Tamul;* Kadishen *T.*
358. Briedelia spinosa; Kora man *T.*
363. Croton Tiglium; Jayapala *S.*; Jamal gata *H.*
368. Croton polyandrum; Hakoon *H.*; Konda-amadum *T.*
374. Ricinus communis; Eranda *S.*; Amadum *T.*; Arend, Arendi, Arindi *H.*; Bherenda *B.*
375. Jatropha Curcas; Baghbarinda *B.*; Napalam *T.*
383. Acalypha indica; Shwet busunta *B.*; Moorkanda *T.*
386. Tragia involucrata; Bichitee *B.*
388. Sapium indicum; Hoorooa *B.*
393. Euphorbia Tirucalli; Lunka sij *B.*; Tiru calli *Tamul.*
399. Euphorbia Ligularia; Munsa sij *B.*
400. Euphorbia nereifolia; Ela-calli; Sij *B.*
413. Elæodendron Roxburghii; Neerija *T.*
446. Xanthoxylon alatum; Durmur *H.*
448. Toddalia aculeata; Conda Cashinda *T.*
449. Brucea sumatrana; Ampadoo Barrowing *Malabar.*
494. Indigofera tinctoria; Nili *S.*; Nil, Neel *B.*; Neel *T.*
497. Indigofera cærulea; Karneeli *T.*
499. Pueraria tuberosa; Daree, Goomodee *T.*
507. Agati grandiflora; Buka *S.*; Buka, Augasta *B.*; Agati *Tamul;* Yerra avesi, Tella avesi *T.*
517. Ormocarpum sennoides; Nall Kashina *T.*
518. Alhagi Maurorum; Yasa, Yavasa *S.*; Juwasa *H.*; Shooturk *P.*
522. Abrus precatorius; Gunja, Krishnala *S.*; Rutti *H.*; Koonch, Goontch *B.*
523. Phaseolus radiatus; Mash-Kuluy, Dord *B.*; Masha *S.*; Minoomoo *T.*
524. Phaseolus trilobus; Kakhal-kuluy *H.*; Pelli pessara *T.*
525. Mucuna Prurita; Doola gonda *T.*; Murkuti, Atma goopta, Kupi-kuchoo *S.*; Alkooshee *B.*
527. Butea frondosa; Pulasa *S.*; Pulas *B.*; Maduga *T.*
528. Butea superba; Tiga-muduga *T.*
529. Pterocarpus Marsupium; Yeanga-sha *T.*; Peet-Sal *B.*
532. Pterocarpus santalinus; Chandana *S.*; Chundana, Rutka-chundun *B.*
540. Cassia Tora; Prusni-purni *S.*; Chakunda *B.*; Tantim *T.*
542. Cassia alata; Dadrooghna *S.*; Dad-murdun *H.* and *B.*; Wandu Rolle *Tamul;* Mitta tamara *T.*
545. Cathartocarpus Fistula; Soovurnuka *S.*; Soondali *B.*; Umultus *H.*; Rela *T.*
547. Guilandina Bonduc; Nata *B.*; Katkarunja, Katkulija *H.*
548. Poinciana pulcherrima; Krishna-choora *S.* and *B.*; Komri *Tamul.*
552. Tamarindus indica; Tintri, Tintiree *S.*; Tintiree, Tintil, Tentool *B.*; Umli, Amli *H.*; Chinta-chittoo *T.*
556. Acacia ferruginea; Woanee *T.*
557. Acacia Catechu; Khira *B.*; Khadira *S.*
559. Acacia arabica; Burbura S.; Nella-tooma *T.*; Babool, Babula *B.*
565. Acacia leucophæa; Tella-tooma *T.*
567. Vachellia Farnesiana; Kustoori, Piktoome *T.*; Urimeda, Vitkhira *S.*; Gooya-babula *B.*

584. Mangifera indica; Am *B.*; Mamadi-chitoo *T.*; Maugas marum *Tamul.*
586. Anacardium occidentale; Hijulee-budam *H.* and *B.*
587. Semecarpus Anacardium; Arushkara, Bhela *S.*; Bhela, Bhola-tuki, Bela-tuki *B.*; Nella-jedee *T.*
611. Ficus indica; Vuta *S.*; Bur, But *B.*; Bagha *Cingalese;* Marie *T.*
616. Ficus religiosa; Pippula, Bodhi-drooma, Chuladula, Koonjurashuna, Aswattha *S.*; Aswat, Asood *B.*; Bogaha *Cingalese;* Rai *T.*
617. Ficus Carica; Unjeer *P.*; Seen *A.*; Doomar, Doombur *B.*
635. Piper trioicum; Murial-tiga *T.*
636. Piper longum; Krishna, Oopukoolya, Videhee, Magudhee, Chupula, Kuna, Ooshuna, Pippulee, Shoundee, Kola *S.*; Pippul *B.*; Pippul-chitoo *T.*
637. Piper Chaba; Chuvyung, Chuvika, Chuvee, Churikung *S.*; Choee B.
638. Piper sylvaticum; Pahari peepul *B.*
642. Piper Betle; Tambooluvulle, Tamboolee, Nagurulee *S.*; Pan *H.* and *B.*
672. Aquilaria Agallocha: Ugooroo *S.*; Ugoor *H.* and *B.*; Ayaloogi, Ayuloogin, Yellanjooj *A.*; Ayaloor-chee, Oud, Oud Hindee *P.*
702. Aristolochia bracteata; Gardi Gavapoo *T.*
703. Aristolochia indica; Eeshwur-mool *B.*; Isaro *T.*
763. Cocculus crispus; Putra-wali *Malay.*
764. Cocculus acuminatus; Baga-mushada *H.*; Tiliakora *B.*; Tiga-mushadee *T.*
765. Cocculus cordifolius; Goluncha-luta *B.* and *H.*; Tippa tiga *T.*
767. Pereira medica; Womivol, Venivel, Bangwelgetta *Cingalese.*
791. Bassia longifolia; Illupi *Tamul.*
793. Bassia latifolia; Madhaca *S.*; Mudhooka, Guroodshpoo, Madharama, Voonaprustha, Mudhooshpoothela, Mudhoo; Mahwa, Muhooa, Muhoola *B.*; Ipie *T.*
797. Diospyrus melanoxylon; Tumballi *Tamul:* Tindoo *H.*; Tumida *T.*
806. Ipomæa Turpethum; Teoree, Dood kulmi *B.*: Tellatagada *T.*
815. Batatas paniculata; Bhoomi-koomra *B.*; Matta-paltiga *T.*
816. Pharbitis Nil; Neel-kulmi *B.*
856. Hymenodictyon excelsum; Bundaroo *T.*
864. Randia dumetorum; Manga *T.*
868. Oldenlandia umbellata; Cheri-Velloo *T.*; Saya-wer, Imburel *Tamul.*
872. Pæderia fœtida; Gundha badhulee *B.*; Gundali *H.*
873. Canthium parviflorum; Balusoo-kura *T.*
901. Vernonia anthelmintica; Somraj *S.* and *B.*; Shendoo-gella-kura *T.*
902. Elephantopus scaber; Samdullum *B.*
940. Artemisia indica; Dona, Dana *S.*; Gund-mar *H.*; Arlemasaya *P.*
967. Plantago Ispaghula; Ispagool *H.* and *P.*
975. Salvadora persica; Pedda-warago-wenki *T.*
982. Cordia latifolia; Bura lesoora *H.*
983. Cordia Myxa; Bohooari *B.*; Lusora, Lesoora *H.*; Nekra *T.*
1029. Anisomeles malabarica; Retti pemeretti *Tamul.*
1032. Vitex Negundo; Sindooka, Sindoowara, Indrasoorusa, Nirgoondi, Indranika *S.*; Nisinda *B.* and *H.*
1033. Gmelina parviflora, Shieri-goomoodoo *T.*
1039. Rhinacanthus communis; Yoothika-purnee *S.*; Jooi pana *B.*; Nagamulli *T.* and *Tamul.*
1044. Gendarussa vulgaris; Jugut-mudun *B.*
1045. Adhatoda Vasica; Vidyumatri, Singhee, Vasica, Vrishu, Uturoosha, Singhashya, Vasooka, Vajiduntuka *S.*; Bakus, Vasooka *H.* and *B.*
1046. Andrographis paniculata; Kala-megh, Kalup-nath, Muha-tita *B.*; Nella-vemgoo *T.*
1050. Herpestes Monniera; Adha.birni *B.*; Sambrani-chittoo *T.*
1096. Agathotes Chirayta; Chirata-tikta, Chirataka *S.*; Chirata *B.*

1114. Strychnos Nux vomica; Koochila *B.*; Musadi *T.*
1115. Strychnos Colubrina; Koochila-luta *B.*; Naga musadi *T.*
1116. Strychnos potatorum; Nirmulee *B.* and *H.*; Induga *T.*; Tettan-kotta *Tamul.*
1122. Ophioxylon serpentinum; Chundrika, Churmuhuntree, Pushooma, bunukarika, Nundunee, Karuvee, Bhudra, Vasoopooshpa, Vasure-Chundrushoora *S.*; Chandra *B.*; Ch'hotachand *H.*; Patalganni *T.*
1127. Nerium odoratum; Kurubee *B.*; Karpud *H.*
1146. Hoya viridiflora; Doodee-palla *T.*; Tita-kunga *B.*
1147. Tylophora asthmatica; Unta-mool *B.*; Kaka-palla *T.*
1153. Hemidesmus indicus; Ununta-mool, Sada-boari *H.*; Palla-soucandee, Ghodie soucandee *T.*
1156. Oxystelma esculentum; Dooghdka *S.*; Kirui, Doodhee, Doodh-luta *B.*; Doodee-palla *T.*
1182. Zingiber officinale; Ardrukum, Shringuverum *S.*; Zenjabil *A.*; Adraka, Ada *B.* and *H.*; Allam *T.*
1183. Zingiber Zerumbet; Butch, Mahaburee-butch *B.*
1184. Zingiber Cassumunar; Vuna Ardrukum *S.*; Bun Ada *H.* and *B.*; Karpushpoo *T.*
1185. Curcuma Zerumbet; Shutee, Gundha-moolee, Shudgrunthhika, Kur-voora, Kurchoora, Pulasha *S.*; Kuchoora *H.* and *T.*; Shuthee, Kuchoora *B.*; Zerumbad *P.*
1186. Curcuma Zedoaria; Vuna-huridra, Sholee, Kinarista, Sholika *S.*; Junglee, Bun Huldi *B.*; Jedwar, Zadwar *A.*
1190. Curcuma angustifolia; Tikor *H.*
1191. Curcuma Amada; Amada *B.*
1192. Kæmpferia Galanga; Chundra-moolika *S.*
1193. Kæmpferia rotunda: Bhooi-champa, Bhoo-champa *B.* and *H.*; Bhoo-chumpuea *S.*
1196. Amomum aromaticum; Morung Elachi *B.*
1199. Elettaria Cardamomum: Prithweeka, Chundruvala, Ela Nishkooti, Buhoola *S.*; Elachi, Elaich *B.*; Ailum chedy *Malabar;* Hil *P.*; Kakulah, Hal *A.*; Sana-yallacci *T.*
1200. Elettaria Cardamomum medium; Do-keswa *H.*
1201. Alpinia Galanga; Koolunyoga, Dhumoola, Teekshnu-moola, Kool-unjuna, Soogundha, Muhabhura-vucha S.; Koolinjan *H.*; Kholin-jan, Khoolunjan *A.*
1207. Crinum asiaticum; Sookh-dursun, Bura-kanoor *B.*; Tolabo, *Cin-galese.*
1232. Caryota urens; Jeeroogoo *T.*
1276. Smilax glabra; Hurina, Hurina-shook-China *H.*
1277. Smilax lanceæfolia; Gootea-shook-China *H.*
1278. Smilax Pseudo-China; Muhesha *B.*
1283. Typhonium trilobatum; Ghekool *B.*; Surei Kund *T.*
1287. Homalomena aromatica: Cuchoo-gundubee *Chittagong.*
1288. Scindapsus officinalis: Guja-pippulee, Kuri-pippulee, Kupi-vullee, Kolu-vullee, Shreyusee, Vushira *S.*; Guj-pippul *B.*
1291. Pistia Stratiotes; Koombhika *S.*; Neeroo boodookee *T.*; Taka panna *H.* and *B.*
1301. Andropogon Ivarancusa; Ibharankusha, Iwarankusha, Kurankusha *B.*
1302. Andropogon Schœnanthus; Malatrinukung, Bhoostrinung *S.*; Gundha-bena *B.*
1305. Saccharum officinarum; Ikshoo, Rusala, Poondra, Kanguruka *S.*; Ik, Ook, Ak, Kooshiar, Poori, Kullooa, Kajooli *B.*; Cherukoo-bodi, Cherukoo-duboo *T.*
1311. Xyris indica; Cheena ghauza, Dabi dooba *B.*

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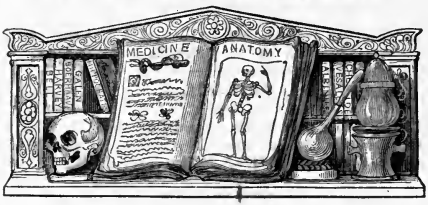

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